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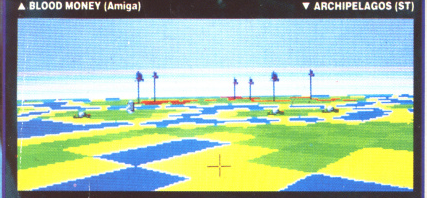

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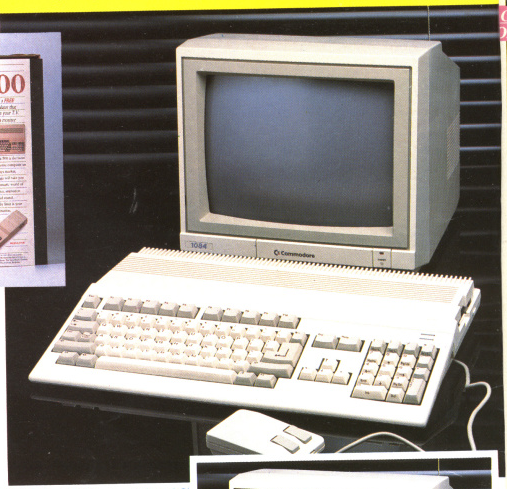

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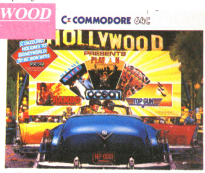

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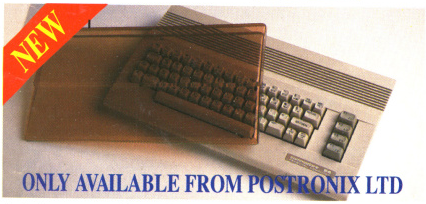

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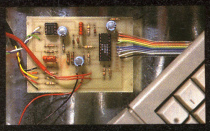
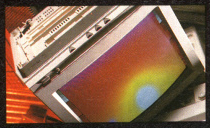


DIY SOUND SAMPLER.....23



PICK A SCREEN.....42

DELUXE PAINT III.....60

ANIMATION TUTORIAL.....68

FLIGHT OF FANTASY.....12

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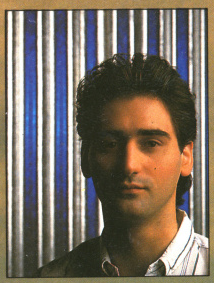


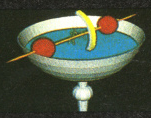
ALL CHANGE

Over the last few months you'll have noticed a startling change in ST Amiga Format – it's so big! You may also have noticed other alterations: erstwhile Editor Ben Taylor has been promoted to Systems Manager (which means he gets to tinker with *Mac Playmate* all day) and I have moved into his hot seat; Stuart Anderton has joined the Format crew as Production Editor (as well as being a wizz with words and DTP systems, he's an experienced phlebotomist); the layout has being given an overhaul by art supremo Gordon Druce. Flick through the issue – I'm sure you'll agree, it's a cracker!

RC Monteiro

REGULARS

NEWS 7
GOLD DUST.....19
PD UPDATE.....95
DESKTOP 100
WORKBENCH.....105
LETTERS.....114
REAR VIEW 122

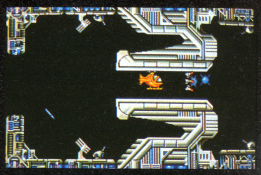


CAD NO! 53
All that's happening in the world of CAD/CAM.

SPECIALS

MONITORS ON TEST 42
CALAMUS.....46
ANIMATION TUTORIAL.....67
ASSEMBLE YOURSELF 98

DISK EXTRA 33



ST

Archipelagos - playable demo of Logotron's Format Gold-rated game; *Replay 3* - sampling software for DIY project; *Cordex* - teach yourself music; *Picswitch 7* - latest release of the file conversion utility; *Fastmouse* - speeds up mouse operation.

AMIGA

Blood Money - fast and furious playable demo of Psygnosis' shoot-em-up; *DiskX* - disk editor; *SetKey* - keymap editor for customising keyboard layout; *Four* - tremendous version of Connect 4 game; *File Requester* - add requesters to programs.

GAMES

Screen Play..... 70
Runing Man..... 78
Ballistix..... 80
Fright Night..... 84
Jug..... 87
Vigilante..... 88
Game Busters..... 91

BLOOD MONEY.....72

ARCHIPELAGOS.....76

ART & NOISE

SUMMA SKETCH 28
MIDISTUDIO.....30
OPUS-1 MCL.....31
CYBER SCENE 58
DELUXE PAINT III 60

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Pascal	89.95	62.95

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Fleet St Publisher	115.00	80.50
GFA Draft Plus	139.95	98.00
K. Comm II	49.95	34.95
K. Graph II	49.95	34.95
K. Ram ST	29.95	20.95
K. Roget	49.95	34.95
K.Seka	49.95	34.95
Newchrome	39.95	27.95
Paintworks	34.95	24.50
Paint Pad	49.95	34.95
Paint Pad Library I	24.95	16.95
Quantrum Paint V2	24.95	16.75
STOS (the Game Creator)	29.95	20.95

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K.Spell	19.95	13.95
Protext V4	99.95	69.95

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Climate	34.95	24.50
Drawplus	198.95	139.25
Lymate	49.95	34.95
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Shoot Em Up Construction Set	24.95	16.50

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MONTEIRO'S MONTH

Hands up who tried to play the playable demo of Zak McKracken last month. Didn't get very far, did you? That's 'cos it ain't playable. Yes, I know it said 'playable' on the cover, on the disk label, in the contents and in the disk pages (several times). Ulp. We screwed up.

Well, it wasn't actually our fault. Honest. Zak McKracken is being distributed in this country by US Gold; the designers and programmers, however, are Lucasfilm in the States. US Gold agreed to run a demo on our disk; they had to contact Lucasfilm and tell them exactly what we wanted and when we wanted it – a 200K playable demo of Zak as soon as possible. Somewhere along the way, the communication line was severed. It wasn't until all our colour pages had been sent to the printer that the demo arrived by Federal Express. And, as you know, what we got was not what we expected.

We did hint on our back page that things might go wrong; the last thing we heard before receiving the demo was that Lucasfilm were going to attempt to send it to US Gold down the telephone line.

Anyway, I'm sure you'll be more than satisfied with the programs on the disk this month. Playable demos of both our Format Gold games. On the ST side there's two levels of the infuriatingly addictive Archipelagos while on the Amiga side there's 20 screens of Blood Money. You can't complain about that!

R C Monteiro

FLY THE WORLD WITH THE AMIGA – PLAY THE ATARI GAME

BUNDLING DEALS TAKE OFF

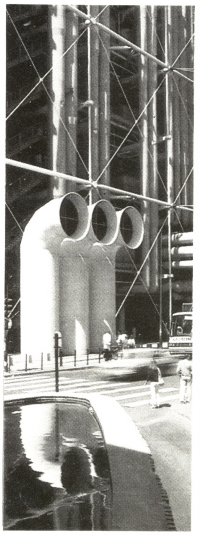
Both Atari and Commodore have revealed that new bundling deals on the lower end 512K machines are imminent.

Buy an Amiga and see the world. Commodore's bundling deal on the A500 is more than the usual set of games: it includes 500 Air Miles. The Air Miles deal allows you free passage on flights all over the planet if you collect enough – and 500 will comfortably get you to European cities like Paris or Amsterdam. Or you could collect more – many high street stores offer them like Green Shield stamps – and take an intercontinental journey.

The rest of the £499 package is a TV modulator, the *Spritz* paint program and three games: *Roger Rabbit*, *Nebulus* and *StarRay*.

Atari are refusing to elaborate on their plans for a revamp of the £399 520STFM games bundle, but chart toppers like *Out Run*, *Gauntlet II*, *Afterburner*, *Predator*, *Space Harrier*, *Eliminator*, and *StarGoose* are considered likely to be included.

Games writers are also being cagey about their involvement in the deal, which Atari's Bob Gleadow said would produce a pack which "will be so strong it will still be attractive next Christmas."



■ **High tech flies high – visit Paris' Pompidou Centre with your Amiga's free Air Miles**

Sensational news for *Dragon's Lair* fans: it's coming out on the ST. ReadySoft in the States are currently working on the ST version; this comes as a surprise as it was claimed by Entertainment International – UK distributors of the Amiga version – that there would be no ST translation.

It's still early days and ReadySoft aren't committing themselves to a release date or to a UK supplier. The Amiga version comes on six disks; how many will the ST's come on? Remember that Amiga disks store 880K and single sided ST disks manage around 360K. Surely the ST version won't come on 12 disks? ReadySoft aren't saying anything at this stage. It's certainly going to be interesting to see what appears.

***Dragon's Lair* has already appeared on the ST in video disc format. Early last year Microdeal arranged a scheme whereby owners of a special video disc player could buy the *Dragon's Lair* disc and control the game from the ST. The laser disc player required its own television while the ST needed to be connected to the ST's monitor. At strategic points in the action, motion would stop and your ST's screen would request you to press a key to go left or right, draw your sword or go on. Microdeal have dropped the product.**

DRAGON'S LAIR ON THE WAY FOR ST

QUICKIES

■ An improved version of **Sprite Master** for the ST has been released by Soft Bits (01-836 2533). It rotates objects faster and has improved circle routines. Existing users can upgrade to version 1.3 by returning their original disk with a stamp to cover postage.

■ **Amiga-Care** is a comprehensive support package which has just been launched by Burocare Graphic Design of Harrow (01-907 3636).

It works on the principle of buying 'units' which can be exchanged for services – one unit for a technical inquiry, 10 units an hour for on-site call out and so on. You can also use units to buy insurance.

■ Language specialists HiSoft (0525 718181) are importing Data Pacific's **Spectre 128** Apple Mac emulator. The advantage this emulator has over others is that Mac disks can be read and written by the ST.

MORE QUICKIES

■ Intelligent Music's **Realtime** sequencer for the ST is now available from MCMXCIX (01-724 4104). It can handle 256 tracks and you edit in real time – hence the name. It costs £199. Also for the ST from MCM is **Dr T Orchestrator**, a sound database which allows you to sort through thousands of sounds. You can also merge and mingle sounds.

■ A collection of fancy borders for graphics and DTP applications is on sale from Electric Distribution (0480 496666). **Border Packs** contains 43 patterns in GEM Metafile format on ST-format disk for £29.95.

■ You can transfer your favourite 35mm slides and prints to Amiga disks. **Jonathan Blackmore** has the knowhow on 0902 715323.

■ You would have thought Australians were the last people who would want to trace their ancestors but it would appear not – a new program for the Amiga called **GENP** is designed to help them discover which ship they were deported on. It is a genealogical database with facilities to display "pedigree charts". *GENP* costs 150 Australian dollars plus post and packing from Genealogical Processing, 37 Charles Street, Cheltenham, Victoria 3192, Australia.

■ Database's latest piece of educational software, ***Fun School 2***, is now available on the ST and Amiga. The program has three different versions for under sixes, six to eight-year-olds and over eights. Database are on 0625 878888.

■ **Budgie UK** are a small band of unpaid games programmers who put their work into the public domain. They have 15 ST games on offer from the usual PD distributors. Contact Simon Rush of Budgie at 42 York Road, Rayleigh, Essex SS6 8SB

■ **Trilogic** (0274 691115) have brought out a stereo digitiser for the Amiga. It plugs into the headphone socket of your hi-fi and is fully compatible with *Audiomaster*, *Perfect Sound*, and *Prosound*. The digitiser costs £37.99, and you can buy it with *Prosound* for

MORE QUICKIES

A HARD DISK FOR UNDER £300

Tempest Computers are offering to make up hard disks to order for the ST and Amiga. They reckon to supply disks of any capacity and expect prices to start at under £300. That's an impressive goal considering the cheapest hard disk on the market is Third Coast's 20Meg ST drive – even that costs £399.

Gary Drake, Tempest's technical sales manager, said: "There is no reason for hard disks for the ST and Amiga to cost so much. I can supply PC compatible 10 or 20Mbyte disks for under a third of the price of ST or Amiga drives. Manufacturers know users will pay inflated prices; we hope to put an end to that and release drives at sensible prices."

■ ***Tempest, EOS House, 145 Staple Hill Road, Fishponds, Bristol, BS16 5AG (0272) 574569.***

UPGRADE FOR HACKER'S SIDEKICK

Less than two weeks after the announcement of the ST *Multiface 1.4*, Romantic Robot have started shipping version 2. The latest *Multiface*, it is claimed, will stop all software. Once stopped, memory can be viewed or edited and a snapshot of RAM saved to disk. Most snapshotted software can then be reloaded and continued from the point at which it was halted. Not all can be restarted though.

What makes the *Multiface* different from other copying/hacking devices is that the hardware gadget must be attached for memory snapshots to reload and execute correctly.

Along with an improved success rate, the version 2 Disk Organizer (an optional £10 disk utility program on ROM that sits beside the *Multiface* ROM software) can be called from anywhere with the *Multiface* menu, has a better printout option and can cope with wildcards.

A bug which prevented the *Multiface* working with Mega ST4s has also been fixed. The reason the device didn't work, it transpires, is the same reason that much software falls down on the top-end Mega machine: the software tried to read or write beyond the 4Mbyte limit.

A disassembler ROM, which will let you disassemble (logically enough) halted programs, is nearing completion. This will set you back £19.95 when it's finished.

The Amiga version of the Multiface isn't expected for several months.

■ ***Romantic Robot, 54 Deanscroft Ave, London, NW9 8EN (01-200 8870).***

FLAIR DEAL

■ **AMS' well-received ST painting package *Flair Paint* has been taken over by Database Software, who will continue to sell it at £34.99 under their own label. Database have acquired most of the AMX range after AMS' parent company, Logitech, decided to rationalise their products. Chris Payne of Database said that Flair Paint would fit in well with Database's ST range.**

GET GAMES TAPED

Hot Shot Entertainments have come up with a new way of checking out the latest games releases – a video tape. Every other month they will publish a tape with around half an hour of highlights from games currently under development and expected to be released in the coming few weeks.

The videos – which will cost £6.49 each – will feature a presenter in time-honoured TV fashion. The presenter will commentate on the games as they are played.

The VHS-format tapes will feature Atari ST, Amiga, CBM64, Spectrum and Amstrad CPC games. The first tape goes on sale on April 28 and will be available from all good software retailers.

ATARI MAKE BRITISH DEAL ON CALAMUS DTP

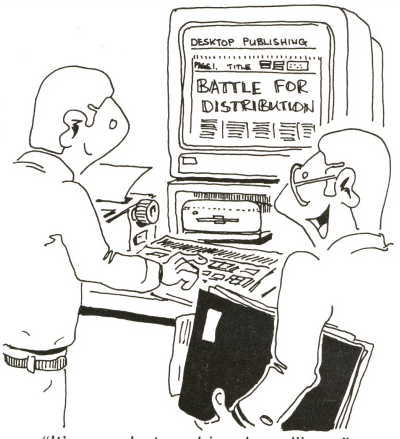
BUT GREY IMPORTERS ARE SET TO MAKE A KILLING

Contrary to news stories in several magazines, DMC Germany are not at odds with Atari UK over the handling of the monster DTP package *Calamus*. Rumours erupted after Signa Publishing announced that they were to take over the distribution of *Calamus* in this country. This revelation strengthened industry pundits' assumption that DMC are unhappy with Atari because of the delay in the package's launch in the UK.

Les Player, Atari's technical manager, put the record straight: "Yes, Atari UK are sitting on *Calamus*, but that's because the original version is so badly bugged that we feel it isn't right to release it in that condition. Consequently it is being re-written for the UK market. Atari are publishing *Calamus* which means it will have an Atari label; Signa will be distributing the product – and hopefully providing end-user support – for us."

The official launch date for *Calamus* is the end of April, but that's about all that is concrete. Projected price is £395 plus £100 for every extra font required – although neither Signa or Atari were willing to confirm this.

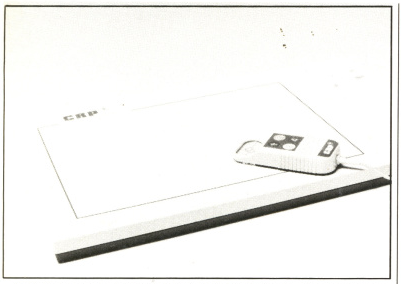
It is possible to get hold of a grey import of *Calamus* from Gainstar. The price is £260 which compares favourably to the Atari-quoted tag of £395. However, don't get too excited because it transpires that the American version won't work on UK STs and, claim Atari, the US version is badly bugged. The reason for the US version not working on UK machines, it seems, is not because of poorly written code that accesses the ROM, but a protection mechanism that checks to see if the machine is of US origin. If the computer isn't from the States then the software refuses to work. Gainstar are currently working on the problem and promise to have a solution by the time you read this.



"It's good at making headlines"

■ *Signa Publishing (official UK distributors), Trevenen House, Cricket Hill Lane, Yateley, Camberley, Surrey, GU17 7BA (0252 874406).*

■ *Gainstar (grey importers), Unit One, Rear of 7 Wellington Road, Sandhurst, Surrey, GU17 8AW (0252 877431).*



AMIGA KEEPS TAKING THE TABLETS

A graphics tablet designed specifically for the Amiga is being imported from Germany by Burocare Graphics Design (01-907 3636). The CRP tablet comes in two versions: one A4, the other twice the size (A3). Burocare claim the tablet to be compatible with all leading Amiga CAD, paint and layout software. The tough surface of the tablet is software scaleable and you can alter the horizontal and vertical aspects. CRP comes with a pen; a puck is available as an optional extra. The A4 version costs £454, with the A3 model weighing in at £684. The puck is an extra £98.

HOW STRANGE IS MY SOFTWARE?

OK, so you use your Amiga for playing games, but what else?

The odd letter or two maybe? Come on now, you're not trying, there must be something unusual you do when you switch on your machine, and we want to know about it.

Commodore are offering equipment to the value of £500 to the reader who has the weirdest, strangest, most innovative use of an Amiga in the home.

The competition will be tough – for instance we know of one Amiga owner who uses his micro to work out the menus for his pet reptiles.

The winner will be chosen at the Commodore show in London in June. The best entries will be asked to demonstrate their innovations at the show in the Novotel in Hammersmith.

To enter, write a brief description of your own peculiar use of a computer – 500 words or so – and send it with any support materials on disk to Commodore Competition, *ST Amiga Format*, 4 Queen Street, Bath BA1 1EJ.

WIN £500-WORTH OF GEAR FOR THE MOST ORIGINAL USE OF AN AMIGA

COMPUTIN' USA

Avid Amiga amigos assembled at the Marriott Marquis, New York, to wander around and witness the recent AmiEXPO show. It was a record attendance as TONY THOMPSON reports.

There were more than 60 exhibitors at the New York show; Saturday's event was so crowded it was difficult to move around the small exhibition hall. The big turnout (circa 12,000) was an interesting contrast to the 7000 or so visitors at the October 1988 show in Los Angeles. Naturally there were enough new products available to satisfy the curiosity of the crowd in New York.

Surprisingly Commodore weren't at the show. However, one visitor was spotted with a Commodore badge. He had an unforgettable day!

ASDG of 925 Stewart Street, Madison (010 1 608 2736585), called a press conference to announce a 24-bit colour separation utility for use with *Professional Scanlab* and *Professional Page*. The importance of their utility is that it enables publishers to produce professional quality colour separations on the Amiga at a fourth the cost of usual methods. *ASDG-RESEP* was developed in co-operation with Gold Disk and is a conversion utility that can be used with *Professional Page*, *Professional ScanLab*, an Amiga 2000, and either a JX-300 or JX-450 colour scanner from Sharp. A similar setup was used in an AmigoTimes page illustration that showed none of the aliasing associated with computer art.

With *RESEP*, an image is saved as both a HAM image and a 16-million colour image. The HAM image is used in *Professional Page* for composition and proofing purposes. When layout is complete, the *Professional Page* file is colour-separated and saved as a PostScript file. *ASDG-RESEP* is then used to replace the HAM images in the PostScript file with the 24-bit colour separation performed in *ScanLab*. The final file can be taken to companies which produce the colour film separations used in the printing process. *ASDG-RESEP* costs $59.85 while *ScanLab* weighs in at $995.

ASDG also announced its $299 *Dual Serial Board*, a hardware/software combination that provides multiple RS232 serial ports on the A2000. It allows running of three or more serial devices at a time and comes with a disk containing a high speed driver and handler.

The device is a dedicated board make up of two AT-compatible nine-pin connectors. It occupies a single expansion slot on the 2000 and doesn't get in the way of the original serial port.

Dr Oxide and his wild bunch at Comp-U-Save, after having been banned from earlier Expos, were re-admitted. There were no rubber chickens festooning the booth. In the past, the humour of the Comp-U-Save group – poking fun at customers' home towns and such – did not go down well with many visitors.

New from Gramma is *Nag Plus 3.0* at $90. There's also *FreD* the speedialer; this $50 software stores phone numbers which can then be dialled with a one-click search-and-dial function. Richard Stockton, author of *Nag* (which up to now has been shareware), spoke at great length about the problems associated with the payment for shareware programs. In all the years he has been writing, he has never received a single penny from any users in the UK! Not very encouraging. Gramma Software are on 010 1 206 3636417.

A portable Amiga is reality. The *Journeyman*, a prototype, was shown which consisted mostly of an A500's innards packed in a suitcase with a small monochrome monitor.

It's not a laptop; it weighs 28 pounds and has no internal power source. It plugs in when you arrive where you're going.

Antic Publishing Inc showed the premiere issue of their *Amiga Plus* magazine. It comes with an optional disk and costs an inflated $15 an issue. Unsurprisingly there were not many takers!

Antic Publishing, 544 2nd St, San Francisco, CA 94107 (010 1 415 9570886).

A QUICK TOUR OF THE SHOW...

■ Dest's **PC Scan** has been converted to run on the Amiga by C Ltd. It costs about $1700 and lets you feed in a sheet of typed material which is then changed to text in your system. C Ltd, 723 E, Skinner, Wichita, KS 67211 (010 1 316 2573807

■ Communications Specialties demonstrated a **Super-VHS** compatible genlock system. Details from 89A Cabot Ct, Hauppauge, NY 11788 (010 1 516 2730404).

■ New from Centaur Software, 14040 Tahiti Way, Ste 528, Marina del Rey, CA 90292 (010 1 213 8215995) is **Mypaint**; a fully functional paint program for children. There are some nice animated option boxes, a 28-picture colouring book and sampled sounds related to the pictures.

■ Dr T's Music Software Inc, 220 Boylston Street, No 206, Chestnut Hill, MA 02167 (010 1 617 2446954). On show were **Dr T KCS V1.6a**, **MRS** and the **Copyist.**

The Copyist is a score-editing, transcription and printing program for music. It will transcribe sequencer data files into treble, bass, alto and percussion clefs. Comes in Professional and DTP versions.

■ **Invision** at $100 allows instant capture, processing and display of video images. Coupled with the *Live* frame grabber from A-Squared, the *Invision* system lets you assign effects to keys so you can play effects into a moving video. Some of the effects: mirror, strobe, mosaic, blinds, colourise, posterise, invert and superimpose. Elan Design Inc, POB 32725, San Francisco, CA 94131 (010 1 415 6218673).

■ Impulse have entered the 3D market with their revision of the *Turbo Silver* software to include stereo vision using LCD shuttered glasses.

Renderings can now be made for 3D images, and the product has been named **Turbo Silver-SV**. The software is $30, or $50 with interface, or $100 with the interface and Sega glasses. Impulse, 6870 Shingle Creek Pkwy, Ste 112, Minneapolis, MD 55430 (010 1 612 566021).

■ **Harmony** is for people who can't play a musical instrument. With the included microphone, you can hum or sing and the result can be edited and even adapted to instruments. Price is $200. Intercore Development Systems, 24 Bruce Dr, South Setauket, NY 11720 (010 1 516 9815930).

■ Mindware International introduced **PageSync** which allows MIDI events and computer animation to be synchronised. It works with computer graphic events and digitised sound samples.

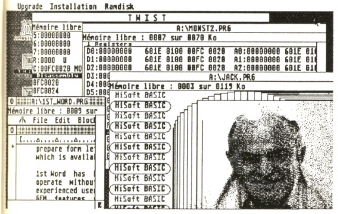
PageSync costs $100 and will work with two other Mindware products: *Page Flipper Plus F/X* and *PageRender 3D*. A PAL version of the latter will cost $159 and is scheduled to be released soon.

Spring Fever

The un-seasonally warm weather must have affected our senses!

Just take a look at the very special deals we are offering ST/Amiga Format readers - all these special prices are exclusive to ST/Amiga Format magazine and are strictly limited.

These offers end on 31 May 1989, are subject to availability and you must use the coupon below when ordering.



TWIST — Atari ST

- ✓ Allows up to 14 programs in memory at once
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"it (Twist) is no doubt the best (switcher) available" **ST World 9/88**

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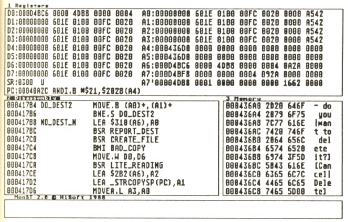

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Special Offers - Atari ST

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Twist switcher program	£17.95 ...

Atari ST Software

HiSoft BASIC ST	£79.95 ...
Power BASIC ST	£49.95 ...
TurboST - the software blitter	£39.95 ...
HiSoft WERCS resource editor	£29.95 ...
FTL Modula-2 Developer	£99.95 ...
Aztec C Professional	£129.00 ...
Aztec C Developer	£179.00 ...
Aztec C Source Code Debugger	£79.00 ...
CRAFT 2 shell	£99.95 ...

New Releases - Atari ST

Spectre128 Macintosh™ emulator	£199.00 ...
HiSoft C Interpreter ideal for learning C	£49.95 ...

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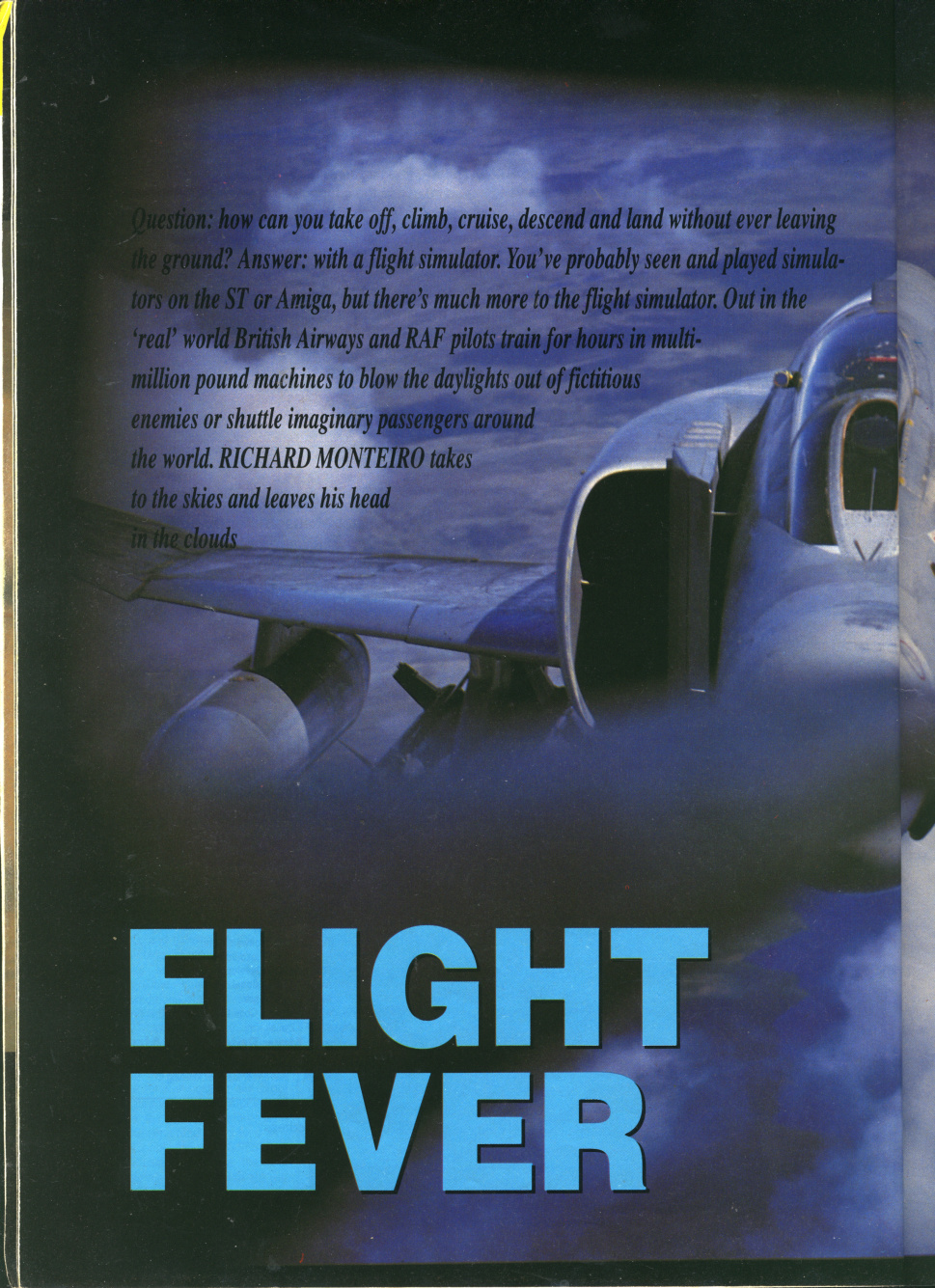
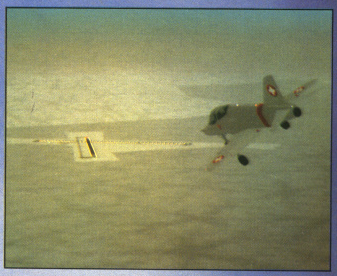
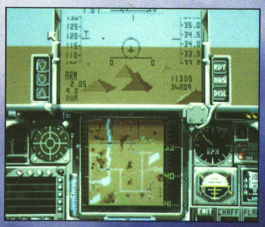


Question: how can you take off, climb, cruise, descend and land without ever leaving the ground? Answer: with a flight simulator. You've probably seen and played simulators on the ST or Amiga, but there's much more to the flight simulator. Out in the 'real' world British Airways and RAF pilots train for hours in multi-million pound machines to blow the daylights out of fictitious enemies or shuttle imaginary passengers around the world. RICHARD MONTEIRO takes to the skies and leaves his head in the clouds

FLIGHT FEVER



■ So you think the custom video circuitry inside the ST and Amiga is good? More than ample for the requirements of a flight simulator say? Well they are capable machines, but a little lacking when compared to Rediffusion's SP-X 500 hardware. The picture below is typical of the system's capabilities. Note the staggering illusion of depth and perspective.



■ Inside a professional F-16 Fighting Falcon aircraft simulator (right) and (left) the Spectrum Holobyte/Mirrorsoft version on the ST. While pilots don't pooh-pooh micro-based flight simulators, they reckon there's a big difference between micro flight simulation and dedicated simulators. The biggest disparity is the method of control. Keys and joysticks are a poor substitute for real aircraft controls. Also real-world hazards like hurricanes, fog and snow aren't properly implemented on the home simulator. On the plus side, home micro simulators force you to read the instruments which – say the professionals – is imperative for survival.

You don't *play* professional flight simulators. Especially not when they weigh in at around £10million. Civil and military pilots the world over log many flying hours inside simulators before attempting the real thing. Naturally, these simulators must mimic the inside of a cockpit, atmospheric conditions and the plane's characteristics as closely as possible. That's no easy task. It's something that requires the assistance of arrays of super chips.

Those undergoing training sit in an airliner flight deck, or fighter cockpit, which comes complete with every last dial and knob. Some simulators are contained inside an enormous box standing on sturdy hydraulic legs. These legs contract and expand depending on the conditions inside the cockpit. We are taking realism! Arcade games like *Afterburner* and *Thunderblade* have a long, long way to go before they even get close.

From the outside these professional simulators look like something out of a sci-fi adventure. Inside, the realism defies belief. Even that undefinable aircraft smell is there. It's uncanny; so much so that many pilots claim that it's all too easy to forget that you're anchored to the ground.

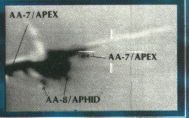
The mimicry doesn't stop there: there's the drone of the engines, the feeling of acceleration and the slight bumps so typical on runways. It all adds up to one hell of an illusion; something David Copperfield would be proud of.

Silicon skies

Many top-end professional simulators enhance the illusion of reality by making use of sophisticated computer-generated scenes that are constantly updated as the flight proceeds. These ray-traced pixel masterpieces are either generated beforehand, and then projected onto an aircraft window-shaped screen when

■ **It's not only British Airways that use the Nevoview SP-X 500HT, but the military too. The computer hardware involved is phenomenal. Imagine a system that can generate 500 polygons every 50th of a second. A typical 500HT setup might consist of eight generators or 'channels' all projecting onto a SupraWIDE screen. Each channel is capable of an 800 by 1000 pixel resolution in over 16 million colours. Although the programmer can only specify 255 colours at once, shading (which involves all the other colours) is done automatically. The large picture – which shows a US Navy T-45F approaching the USS Nimitz aircraft carrier – demonstrates what the CT-6 (SP-X's big brother) system is capable of. The shot above shows what a BA pilot coming in to land at Frankfurt at night might see on an SP-X fitted simulator.**

■ **Date: 4th January 1989. Location: somewhere over the Mediterranean. Scenario: seconds before a Libyan MiG-23 Flogger was blown out of the sky by a US Navy F-14 Tomcat. The picture shows a computer enhanced image taken from the on-board video recorder of the lead F-14 Tomcat. Overlays show that the MiG was armed with both Apex and Aphid air-to-air missiles. The shootdown occurred northeast of Al Bumbah Military Airfield on the coast of Libya. The dogfight occurred because the aircraft carrier USS John F Kennedy (CV-67), operating in international waters in the Mediterranean, was approached by two MiGs in a "hostile manner". The rest is history.**



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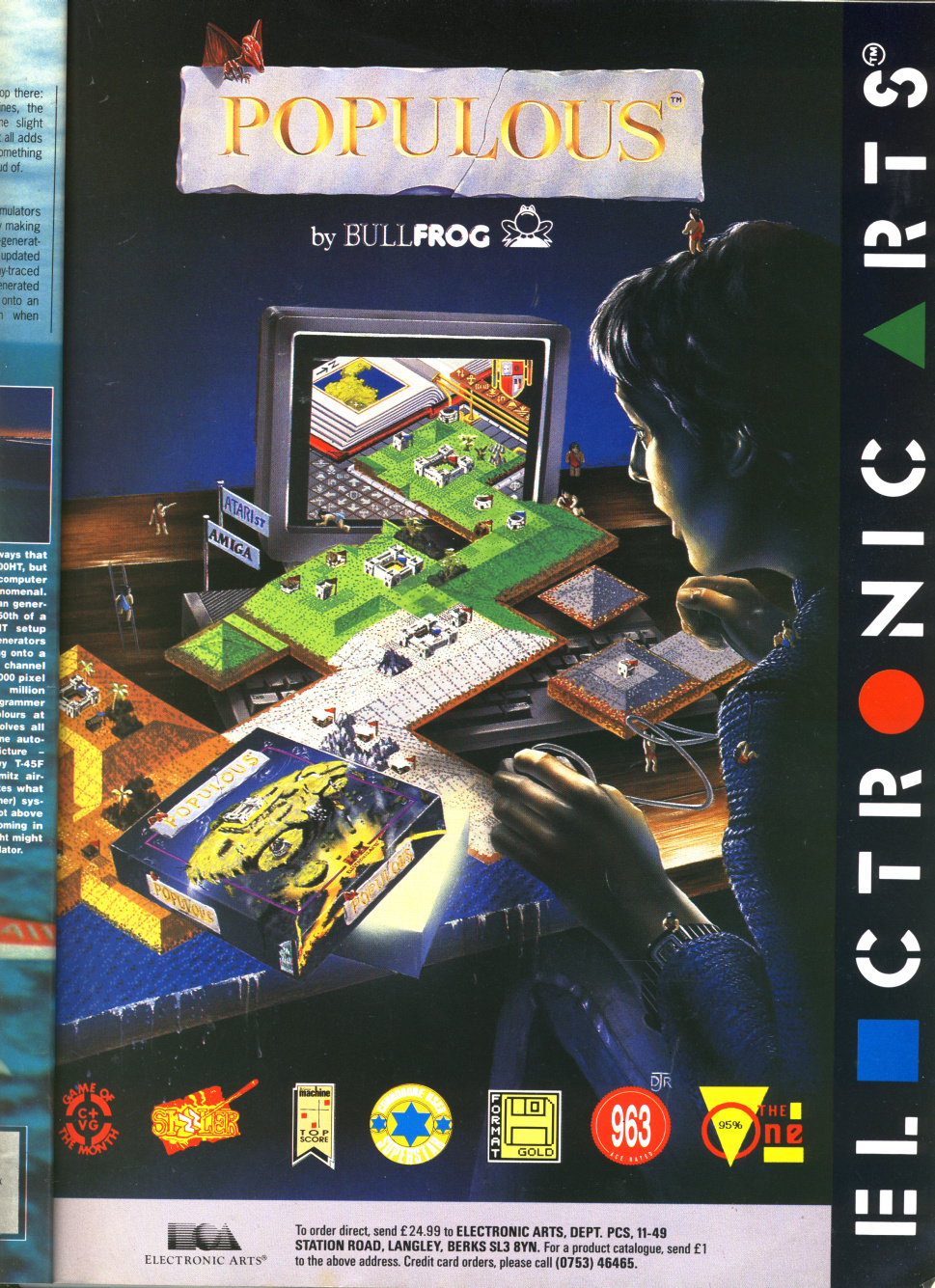
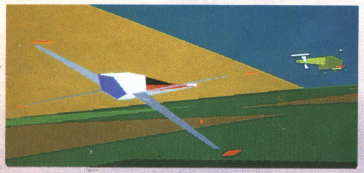


TRANSPUTERS TAKE OFF

This is what the *INMOS Flight Simulator* looks like. Imagine it running at 23 frames a second! You need processing power to do that – a farm of T800s will do. The simulator is the brainchild of Steve Ghee who was inspired by the Lucasfilm/Disney sim in the States. Together with Inmos associate Phil Atkins (responsible for the 3D display and shading routines), Steve managed to put together a working version after only two weeks.

The game can be played by up to four people simultaneously; each player has a pilot's view of the scene. The winner is the last player left flying. It's not really a flight simulator in the sense of *Flight Simulator II*: you can't take off or land – just fly and shoot. The system runs on an Inmos transputer development board and was programmed in the parallel processing language Occam.

Phil's fancy graphic work has already been used to show off the ATW and it's very possible you'll be seeing a lot more it.



■ **Although not quite on a par with SP-X500, the soon-to-be released Bomber from Vektor looks most impressive.**

needed, or in real-time. Millions of pixels make up the outside picture which can be anything from a runway to sky and cloud. There is an outside view to cover almost every eventuality – including emergency landings and crashes!

British Airways have a dozen or so simulators at their training base in Cranebank (on the outskirts of Heathrow airport); the total simulator investment amounts to some £60 million. The latest addition – a Boeing 747-400 system – cost a cool £9.5 million.

The machine that every commercial pilot dreams of flying, though, is Concorde. Bristol is one of the birthplaces of Concorde (the other being Toulouse in France) and consequently it is there – at Filton – that the BA-owned Concorde simulator rests. Recently the simulator has had a £2.2 million face lift. Most of the money went into the installation of a new CGI (computer generated image) system. It needed it! The original Concorde system, built in 1975, had a video camera roaming over a model projected onto the screen. As the control column of the flight deck was moved, so the camera would move, giving the impression of motion. An area of about 12 miles by four miles was covered. That's not a lot of room for a high speed plane to move around in. The main drawback of the old system was that the simulated view was ahead only – glance out of the side windows and you'd see nothing.

In its place is Rediffusion Simulation's Novoview SP-X500HT which generates images suitable for its SupraWIDE screen. The screen covers an area of 150 degrees horizontally by 40 degrees vertically. Not only does this mean more realistic images, but all-around views.

View from above

So much for what's going on in the real world at present. The future of flight simulators is uncertain. Not only for the home user, but for the professional as well. Work in the States has long been going on on visual display systems where the pilot wears an over-sized helmet which prevents him from seeing the real world. A computer image of the outside – along with the plane's status – is projected on the inside of the helmet. This is done so that the pilot can be placed in a comfortable position to minimise the chances of a blackout during high-G turns. Of course, this only applies to military aircraft at the moment.

And the next stage? Fully computer-controlled planes. Make the pilot redundant and there won't be a need for sims. Then software houses would have to find something else to simulate! ■

LOOKING AT THE FUTURE

Because modern fighter aircraft subject pilots to such great physical stress caused by extreme gravitational forces of high speed manoeuvring, the cockpit of the future will be smaller and feature reclining seats restricting the pilot's view of the outside world.

Novel visual display systems are currently being researched. In concept, helmets would give the pilot a computer image of the external world and the aircraft's control system.

In the picture, the foreground shows armed missiles and bombs available on the aircraft (red in the foreground) while instruments show the aircraft status. The projected flight path of the aircraft is shown as a winding road in the middle. Red designates unfriendly forces. A red enemy aircraft is surrounded by a yellow box; two friendly aircraft are seen to the left as white shapes. A surface-to-air threat is seen beside the projected flight path and is indicated by a large red shape designating its area of lethality. Round pillars show relative air speed.

The gravitational stress placed on fighter pilots at the moment is phenomenal; by the time these visual displays come into use, even more stress will have to be endured. Where will it end? One theory currently doing the rounds is pilotless planes.

MIXING Business WITH LEISURE WILL BE A REAL EDUCATION

Commodore computer show

Britain's brightest event for Commodore computer users is back! And there's more to see than ever before.

This show has three main themes covering some of the major uses to which Commodore machines are put. There are over 70 key companies who will be exhibiting their latest products, which means that just about everything that's new in the Commodore world will be on show!

Novotel Exhibition Complex, Hammersmith, London W6
Friday to Sunday
June 2 to 4
10am-6pm Friday & Saturday; 10am-4pm Sunday

Business

Many companies will be demonstrating their latest software and hardware, specially designed to release the full business potential of Commodore computers.

As well as products for the C64 and Amiga series, you'll be able to try out applications for the price-beating Commodore PC compatible micros.

And you'll also be able to attend seminars covering all aspects of using Commodore micros in your business.

Leisure

The C64 and Amiga computers are the most powerful 8 and 16 bit micros for producing fast-action arcade quality games. The range of new software on show will demonstrate how these machines' power is continually being stretched, producing faster and even more addictive games with superb graphics.

If you're a keen game player, you'll find there's so much on offer at the show you're guaranteed a real treat!

Education

Commodore micros are now used as educational tools all over the country. With the development of BBC Basic on the Amiga, and the advent of Desktop Video (combining TV pictures with text and graphics), the range of educational applications is endless.

At the show you'll see how the latest software packages are making real breakthroughs in the educational sector, and be able to try them out for yourself.

Special Events

As well as special events and presentations, you'll also be able to meet some of your favourite celebrities, and maybe get a chance to talk with them about how they use micros in their work.

So for a great day out, whether you want to see what the future holds for Commodore computers, to buy the latest software or to get advice on specific applications, the Commodore show is the place to go. And if you send in the coupon today, we'll knock £1 off the price of each ticket!

● *For the first time we are offering a family ticket for just £11 allowing entry for two adults and two children – saving up to £7 off the usual entry price!*

How To Get There
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GOLD DUST

This month's letter from America from Format*'s own STEVE GOLD contains a bit more fuel for the raging 'My ST's better than your Amiga so there' debate. The letters editor is holding his breath...*

This month marks a major milestone in Amigan history in the US. It seems that earlier rumours of the Amiga outselling the Atari ST are true. As of March, Commodore US announced that it had 1,600 stores stocking Amiga computers and associated hardware – far more that those stocking the ST.

This situation contrasts with that of March 1988, when Commodore had a mere 800 stores in the US, and a large number of disgruntled retailers threatening to stop selling the Amiga.

The reason was simple – discounting, which is now becoming a problem for Commodore in the UK, was prevalent in the US in 1987/88. Amiga buyers, always keen for a discount, were naturally heading for the discount merchants to buy their hardware. Unfortunately, when they hit problems, those same users headed for the speciality stores that offered free advice.

The trouble was, the speciality store owners couldn't afford to offer free advice to customers who hadn't bought their hardware from their shop. The result was that discount merchants offered little or no support, and unhappy speciality stores were burdened with freeloaders galore.

Commodore's US management undertook to resolve the problem by increasing the number of full-price outlets and taking a close look at the mail order outlets and how much support they were (or rather, were not) giving Amiga users.

ST Amiga Format readers may note, when skimming through one of the this magazine's US cousins, how few mail order hardware discount ads there are compared to a year ago. Whilst the end result has been slightly higher prices for the computers, the long term benefits to Amigans in the US are far greater.

The past year's growth in Amiga hardware has brought some positive benefits for Amiga users in the UK. Several new shareware operations have opened up for business in the US, almost all of them offering superb shareware packages for a few dollars a disk.

On the communications software front, an increasing number of on-line services and BBs are now supporting the Z-Modem file transfer protocol. Z-Modem allows data to be transmitted as quickly as possible over a modem link and, if any errors are detected, the corrected packets of data are sent separately so as not to interrupt the data flow.

The result is that Z-Modem is the fastest and most efficient file transfer protocol around at the moment, and the system is supported in an increasing number of Amiga communications packages.

Amy Today, the popular Amiga electronic communications newsletter, ran an interesting comparison between four major Amiga comms packages in its March issue. The packages were *AZComm*, *Amic*, *Atalk IIIe* and *Online!*

The results that *Amy Today* found were quite surpising, with *AZComm*, the, public domain comms package for the Amiga, out-performing the competition in Z-Modem tests.

The moral here – paying more for a package does not necessarily mean the software is better. It can mean quite the reverse, in fact!

In the ST camp this month, there are some unconfirmed rumours that Atari will phase out the 1040ST later this year in favour of a new 1Mb Mega ST machine.

The reason for the change? From Atari's point of view, it will enable the price on the 520ST to be cut without damaging its 1Mb ST market share. From the user's point of view it will allow the Mega ST expansion bus system to be used.

The word is that Atari sees the Mega ST chassis as a way of beating Commodore with its A500 and – assuming it ever sees the light of day – an official 1MB Amiga in the A500's case.

For existing standard ST users (520s and 1040s, that is), one of the major plus points of the Mega ST series is the 'pro' feel of the Mega's keyboard. Regent Systems (0101-213-439-9664) reckon it has the answer with its *Megatouch* ST keyboard underlay system.

The Megatouch retails for $11.95 plus postage and first reports indicate that the keypad adapter is going down a storm in the US, especially amongst those ST owners who can't afford an upgrade to the Mega ST on grounds of the keyboard alone.

If your budget can stretch a little further, however, a new US company – Navarone Industries – has released a range of three hardware add-ons for the ST at really budget prices. All of the gizmos plug into any Atari ST via the cartridge port, and do all sorts of interesting things.

The three new products from Navarone are: *Timekeeper*, *VideoDigitiser*, and the *Audio Digitiser*.

The Timekeeper cartridge costs $29.95 and is a battery-operated clock/calendar unit that keeps track of the time and date. Unlike other units of this type (and in common with of Navarone's cartridge add-ons), the Timekeeper cartridge is a 'straight-through' unit allowing further cartridge port add-ons to be plugged in.

The Video Digitiser, meanwhile, is a $79.95 real-time digitiser that allows almost any video source to be linked up to the ST and feed digitised images to disk and/or screen. Several grey scales are available as well as animation facilities.

The Sound Digitiser is similar in concept to the video unit and operates with sound samples instead. The sounds can be viewed through an oscilloscope-style screen on ST and/or played back through the cartridge outputs for an external speaker system.

Sounds played into the sound digitiser system can be manipulated at will, using compress, stretch, twist and reverse playback techniques, At $99.95, this has to be an interesting innovation for music fans of the ST.

If these add-ons sound exciting, Navarone are planning a second wave of ST add-ons for release in the third quarter of this year. Navarone Industries, 454 Kenneth Avenue, Campbell, CA 95008. Tel: 0101-408-378-8177.

Finally this month, just room to report that Atari has contracted with DIP in the UK for the production of at least one more version of its *Pocket Folio* computer, the 80C88-based version of which was unveiled at the *Which Computer?* Show earlier this year.

First reports indicate that an 80286-based version of the Pocket Folio is planned, with an 80386-based version on the horizon. It's a pity they aren't working on a pocket ST...

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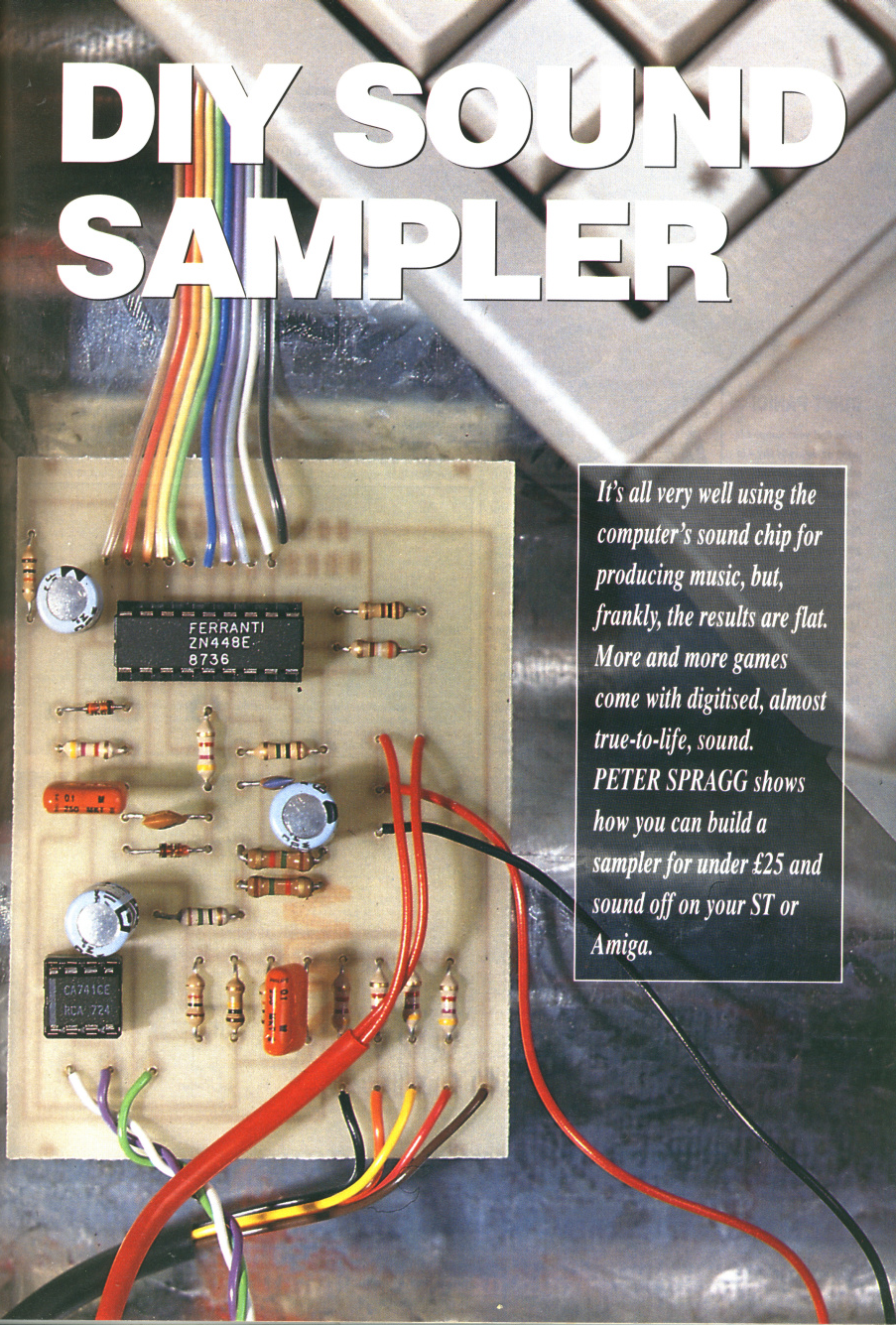


It's all very well using the computer's sound chip for producing music, but, frankly, the results are flat. More and more games come with digitised, almost true-to-life, sound. PETER SPRAGG shows how you can build a sampler for under £25 and sound off on your ST or Amiga.

DON'T PANIC!

If you find your sampler is being unnaturally shy – in other words it doesn't work – you'll be relieved to know that kit suppliers Magenta are offering a get-you-going service. Send your completed unit back to them with a £6 cheque to cover costs. Make sure it is properly padded and address it to: Sound Sampler Repairs, Magenta Electronics, 135 Hunter Street, Burton-on-Trent, Staffs, DE14 2ST. Allow a couple of weeks for return.

At last you can grab sounds and get your computer to play back the results. "Nonsense", you might cry. You can already do that as there are countless sampling devices on the market. True, but you won't be able to capture sounds as cheaply. And you'll have the satisfaction of having built the gadget yourself.

This add-on sound sampler for the ST and Amiga – or indeed almost any micro that can use the printer port as a means of receiving data – will let you digitise everyday sounds and replay the results through the computer's monitor or television. The effects are spectacular. If you're only used to sound chip noise, then you'll be in for a nice surprise. There's nothing to beat the thrill of realistic sound coming from your machine's monitor.

The sampler is a single channel type which mixes both the left and right channels of a stereo input into a mono signal before converting it to a digital signal for the computer to read.

The Format sound sampler is a box which plugs into the parallel (printer) port of the ST or Amiga. Software on the Atari side of the disk will let you grab and replay samples while a disk supplied with the parts from Magenta will let Amiga enthusiasts do the same. More of the software later though.

Power is supplied to the sampler by a nine Volt battery. As the ST doesn't have a power line it was decided that a battery would be the best bet. An optional socket can be fitted to the board which allows the sampler to get power from a suitable mains transformer.

Details of the printed circuit board are shown in figure 2 – assuming you've bought the kit from Magenta Electronics (see the parts list elsewhere) all you have to do is identify the components, bend their leads to fit into the corresponding holes on the board and solder them into place. The circuit is made up of a high precision analogue to digital converter (ADC) and the minimum of components – this is to keep the costs as low as possible. The chip is connected to operate at 1MHz which is way above the maximum sampling rate of any available software. It is connected in 'bipolar' mode which simply allows it to sample all types of audio input.

A pre-amplifier has been built into the circuit to provide a high level input for the ADC. Effectively this means low level outputs like tape players and ampli-

GET KITTED OUT!

Ordering parts from a catalogue is a hassle, and if you've not done it before you'll rapidly get lost. But don't worry; Format in conjunction with Magenta Electronics is offering a complete kit of parts for sale.

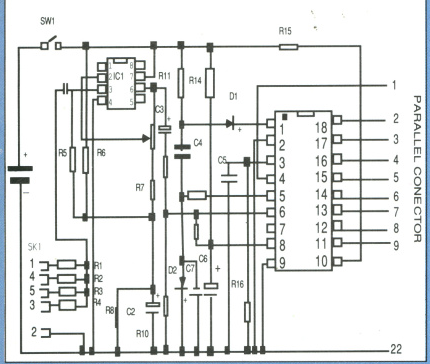
There are several deals on offer so make sure you state clearly which lot you want and include the correct payment:

Kit with elegant box as seen above: £22
Amiga disk with Perfect Sound V2.1 sampling software: £4
Built and tested sound sampler: £28
9 volt power supply suitable for use with sampler: £3.95

If you bodge things up, Magenta are offering a repair service. Simply send back the complete kit and they will get it working. The price for this is £6.

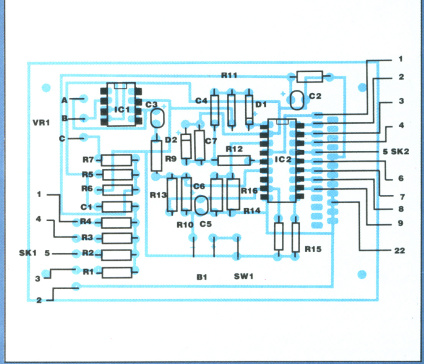
Send your orders to Format Sound Sampler, Magenta Electronics, 135 Hunter Street, Burton-on-Trent, Staffs, DE14 2ST or phone 0283 65435 with your credit card details. Please allow 28 days for delivery.

■ **Figure 1**



■ **Figure 1: the circuit diagram. IC1 is the pre-amplifier for ramping up the in-coming sound signal while IC2 is the ZN448E 8-bit analogue to digital converter. The ADC takes everyday sound and converts it into the digital equivalent, numbers that the computer understands.**

■ **Figure 2**



■ **Figure 2: the component layout diagram. This shows how the components fit onto the printed circuit board supplied with the kit. Push the component leads through the holes so that the wire pokes through to the coppered side of the board. Solder and trim any excess wire.**

fiers can be used to drive the sampler. You shouldn't connect the unit to the speaker outputs of an amplifier as this will blow your sampler. The headphone socket could be used as a sound source, but the results aren't that impressive.

The circuit is connected to the parallel port by a 25-way connector. A male connector is used on the A500, A2000 and STs; a female version is required for the A1000.

Building the sampler is straight forward. The only tools you'll need are a soldering iron and small wire cutters. Don't forget the solder.

It is better to start soldering the smaller components into place first: it helps to keep the board flat. Take the resistors and identify them (thier colours have been printed alonside the parts list to help you identify them). Bend their legs by 90 degrees to their bodies; they should now slot into the correct places on the board. All components are placed into the board from the plain side and soldered to the tracks on the other side. Solder the resistors into place, making sure you have them in the correct place, and snip off any excess wire.

The two diodes have to be inserted the correct way round. There is usually a coloured band at one end which indicates the positive end. The diodes should be soldered onto the board with the band towards the plus sign on the board.

Next take the DIL (dual in line) sockets and solder them into three correct holes. These can go in any way round. Don't put the ICs in yet as the heat from the soldering iron may damage them.

The electrolytic capacitors also have to be inserted the correct way round. These are marked with a minus (-) sign on one side of their body. The other side is marked with a plus; this side should be soldered into place towards the plus side on the board. Solder the remaining capacitors next. These can be inserted any way round.

Make the connecting cable for interfacing to the computer next. This is made using a 350mm length of 10-way ribbon cable. Any length can be used, but the shorter the cable the less chance there is of picking up noise during sampling. Seperate the strands at both ends by about 20mm. Strip each of the strands by roughly 5mm and gently twist each of them to prevent them from fraying. Melt a little solder onto each strand to make doubly sure that the cores don't come apart. Snip off any lumps of solder that collect at the ends of the strands. Carry out this procedure at both ends. Take the 25-way connector and apply a little solder to the 10 pins indicated in figure 3. Thread the ribbon cable through the grommet on the connector (if there is one) and then solder each of the cores to the tinned pins on the connector. Take the other end of the connector and thread it through the grommet in the case. Solder the cores into the board as shown in figure 2. Using a multi-coloured ribbon cable makes it easy to connect the correct core to the right holes of the board.

Five pieces of cable should be stripped back and soldered into the input holes at thwe bottom left hand side of the board. The wire should be about 60mm long and soldered to the back of the input socket as shown. The ground pin (2) should be connected to the case of the 5-pin DIN assuming it is being used. If a metal case is used to house the sampler then make sure it also has a ground cable attached.

Any type of input socket can be used – see figure 4. Just be careful to hook the ground wire to the ground pin.

A length of three core cable approx 130mm long is used to connect the volume control to the board. The wiring

SAMPLING SOFTWARE FOR THE AMIGA

So you're dying to use your sampler. Well, you need software. The best value software is the public domain offering called *Perfect Sound*. This program was given away on the issue six cover disk. So if you've got it, dig it out and get sampling. Full instructions on using the program reside in the issue six disk pages.

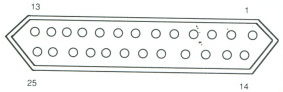
If you don't have *Perfect Sound* then you will be pleased to know that Magenta (0283 65435) can supply you with *Perfect Sound* version 2.1 for the reasonable sum of £4. The price includes a disk and packing and postage.

You've got the software, what now? *Perfect Sound* can be loaded either from the Workbench or from the CLI. The software is operated through the use of both standard pull down menus and various on-screen gadgets. There are numerous powerful features available, such as the ability to combine two seperate samples into one stereo sample. All the usual facilities such as cutting, copying and pasting chunks of sound samples are there. It's an easy package to use – the best way to familiarise yourself with it is to get stuck in.

STEREO SAMPLING

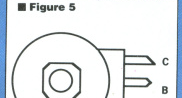
Peter Spragg has designed a stereo adapter for the DIY sampler. This will only work on an Amiga running the *Perfect Sound* software. The module, which fits neatly into the sampler, is available from Peter at 12 Somerset Rd, Bridgwater, Somerset, TA6 5NT. Cost is £15.

■ **Figure 3**



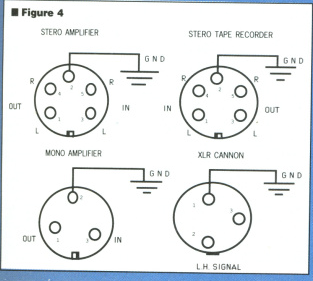
■ **Figure 3: parallel pinout connector. When soldering the wires to the pins make sure you don't cross any. Also note that the diagram shows the view you get when looking at the computer.**

■ **Figure 5**

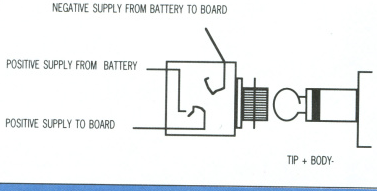


■ **Figure 5: potentiometer connections. This shows where the leads from the board (figure 2) need to be connected to the potentiometer. Ensure you connect the correct leads to the proper places on the board.**

■ **Figure 4**



■ **Figure 6**



■ **Figure 6: optional external power supply wiring diagram (supplied with kit). Ensure you hook the positive and negative terminals the correct way round. If used, the external power supply will automatically switch out the battery.**

■ **Figure 4: various audio connections. Almost any type of input socket can be used. Here's a selection of four. Do take care that the ground wire is attached to the appropriate ground pin.**

connections are shown in figure 5. Connect the on/off switch with a length of two-core wire approximately 70mm long. Attach one core to the centre pin and the other to any of the outer pins.

The battery connector is soldered into place next. Make sure that the red (positive) lead goes to the hole marked with a plus sign on the board. An external power supply can be used. The supply can be bought in any popular high street electrical store. Do make sure that the supply is nine volts DC. The wiring connections are shown in figure 6. This is an extra optional piece of kit and doesn't need to be included. The internal battery is disconnected automatically if an external power source is used.

With all the connections made, it's time to insert the two ICs into their appropriate sockets. A small indentation tells you which way round the chip should go.

Both should face the top of the board; IC1 on the left and IC2 on the right.

Mount the circuit board in the box and ensure nothing shorts out the circuit tracks.

Switch off your computer and the sampler when everything is assembled. Plug the sampler into the parallel port. Switch everything on and cross your fingers. Load the sampling software and see if it works.

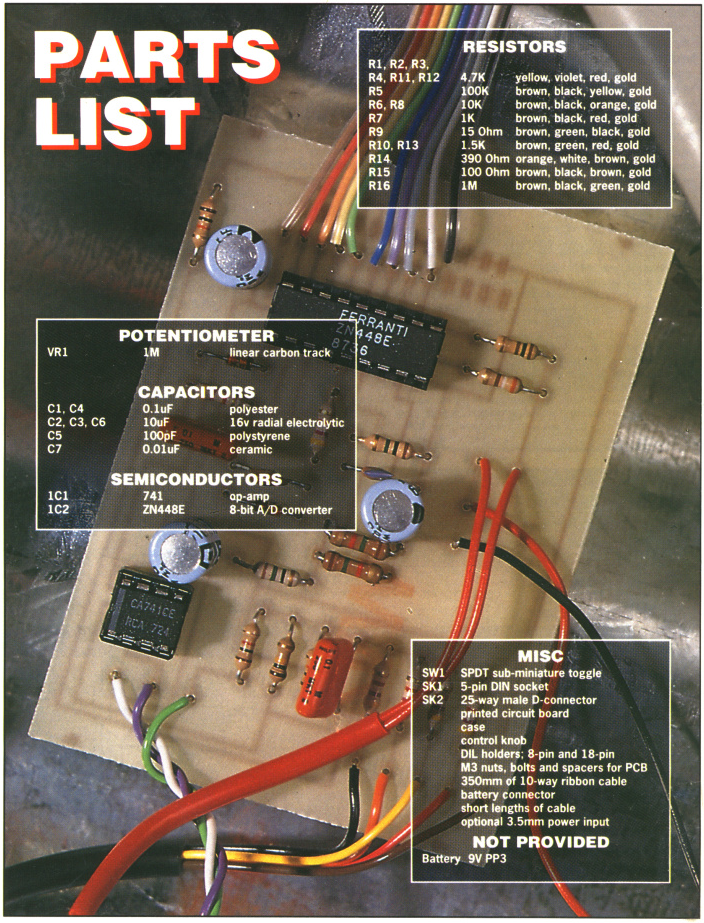
If there are problems with the unit you'll have to open up the sampler and follow every connection and solder blob to ensure that everything goes to the correct destination and there are no shorts.

DON'T FORGET

Magenta Electronics are still selling the Speech Synthesiser kit (£29.95) mentioned in issue 8 and the Amiga MIDI interface (£19.95) from issue 5. Magenta are on 0283 65435. If you're interested, you can get the back issues which explain how to put the hardware gadgets together. Phone our mail order offices in Somerton on 0458 74011 for details.

REPLAY 3 FOR THE ST

Now that you've built the sampler you'll need some software to grab sounds. On this month's cover disk you'll find a near-complete version of the *Replay 3* sampling software from Microdeal. You can thank Tony Racine at 2-Bit Systems for putting the software together. He's done a superb job as you'll find out when you start using it. Full instructions on using *Replay 3* in the disk pages (page 36). Microdeal, on 0726 68020, sell *Replay 4* for the ST. We reviewed it last issue.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RESISTORS
R1, R2, R3, R4, R11, R12 4.7K yellow, violet, red, gold
R5 100K brown, black, yellow, gold
R6, R8 10K brown, black, orange, gold
R7 1K brown, black, red, gold
R9 15 Ohm brown, green, black, gold
R10, R13 1.5K brown, green, red, gold
R14 390 Ohm orange, white, brown, gold
R15 100 Ohm brown, black, brown, gold
R16 1M brown, black, green, gold
POTENTIOMETER
VR1 1M linear carbon track
CAPACITORS
C1, C4 0.1uF polyester
C2, C3, C6 10uF 16v radial electrolytic
C5 100pF polystyrene
C7 0.01uF ceramic
SEMICONDUCTORS
1C1 741 op-amp
1C2 ZN448E 8-bit A/D converter
MISC
SW1 SPDT sub-miniature toggle
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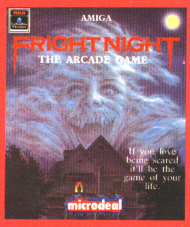

microdeal

SCREEN SHOT FROM ARCADE GAME

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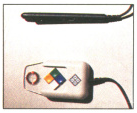
Does your mouse bore you? Do you find it's ball getting all clogged up? Is bank account in a healthy condition? If so, then perhaps you should consider a graphics tablet. GARY BARRETT takes a look at an Amiga tablet and finds out what Moses saw in them.

SUMMA SKETCH



PUCK AND PEN

Before you switch on the tablet you have to choose whether you want to use the stylus or cursor. The puck is a mouse-like object with four buttons and a cross hair to help line up your target. The puck's buttons replace the left and right mouse buttons. The stylus has one button on the side and another at the tip.

£458.85 ■ All Amigas ■ HB Marketing, Brooklyn House, 22 The Green, West Drayton, Middx, UB7 7PQ (0895 444433)

Since the dawn of time man has written on slabs of stone, tablets they're called. Even God has been known to scratch a few words on such things. People eventually got sick of taking out a hammer and chisel every time they wanted to write a shopping list, thus paper was invented. Thousands of years later the tablet has returned; only now it's a piece of electronic gadgetry that plugs into your Amiga.

What do you get for your money you ask? What do you mean you didn't ask? You're gonna be told anyway! You get a square graphics tablet, a power supply, a cursor and a stylus (puck and pen if you like). You also get a disk for your ever faithful Amiga and an instruction manual.

My mouse for a stylus

Switching over to a stylus or cursor is a simple matter: double click on the AProDraw program on the disk and in matter of seconds you're switched to the tablet. The mouse no longer functions; instead the pointer is positioned according to where the stylus is with respect to the tablet. Reversing the process is is just as simple, only this time you double click on the file –AProDraw.

Also on the disk are two other programs: APD_Scale and APD_Config. APD_Scale allows you to adjust the scaling of the tablet. It lets you increase or decrease the size of something on the tablet: convert a postcard to poster, a record sleeve to a beer mat or an Amiga to a Pocket PC. APD_Config is used to set up AProDraw according to the hardware you own.

Any use?

Before you rush out to get *SummaSketch* perhaps you should consider some uses for it. One obvious use is with art packages: it's so much easier to use a stylus for tracing a picture than it is to use a mouse. The cursor allows for even more accurate drawing.

Tablets can be used in computer aided design or CAD (see pages 53 to 56), transferring technical drawing and the like to computer and then using the CAD software. Some games can even be controlled with the puck or pen (but you'd be mad to buy the graphics tablet for that sort of use). You can of course use it instead of a mouse on the Workbench.

features 0 1 2 3 4 5

performance 0 1 2 3 4 5

ease of use 0 1 2 3 4 5

manuals 0 1 2 3 4 5

format value 0 1 2 3 4 5

for

- Makes transferring line drawings to computer much easier
- Compatible with most applications programs
- Puck and stylus mimic mouse movement perfectly

against

- Expensive
- Best used in conjunction with a paint package

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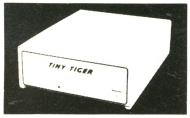

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SPEAKING THE LANGUAGE

A music composition language allows you to construct a piece of music by combining a series of special text commands and constructions, as you would write a program in another language such as BASIC or Forth. Because programming languages work with strings, loops and subroutines, it's possible to use an MCL to create long, complex pieces, without actually having to play a note on a keyboard. For games music, this is an easy way to create long, semi-random pieces.

SOUND ADVICE

Feel you've got a symphony inside you but can't play a note? A music composition language together with a MIDI synthesiser could be the answer, as CHRIS JENKINS finds out

features 0 1 2 3 4 5

performance 0 1 2 3 4 5

ease of use 0 1 2 3 4 5

manuals 0 1 2 3 4 5

format value 0 1 2 3 4 5

Opus-1 MCL

for

- Unique and challenging program
- Ideal for good programmers with no instrument playing schemes

against

- Requires you to learn a complex language
- Demands a wordprocessor, and probably requires a more conventional music package

Opus-1 MCL
£99.95 ■ All Amigas (but see text) ■ Ariadne Software, 273 Kensal Road, London W10 5DB (01-960 0204)

Opus-1 MCL is the first music composition language for the Amiga. MCLs have a long and chequered history; in the early days of computer music synthesis, balding academics used them to generate semi-random burblings which put many people off the idea of computer music for life. In more recent times, the best-known example has been the Fairlight MCL, and, on the domestic scene, the Hybrid Technology Music 5000 system for the BBC micro, which uses digital synthesiser hardware combined with a sophisticated software package.

Opus-1 accepts music written in the form of text, and compiles it into standard Amiga format (IFF-SMUS) files which can be read by other programs like *Deluxe Music Construction Set* or *Aegis Sonix*. It supports Amiga IFF sound samples and external MIDI instruments, so it's suitable for all levels of hardware investment.

The package comes with an unprotected language disk which can be run from the CLI or Workbench, an instruments disk, and a public domain music demo. The 35-page manual is full of jokes about losing your toothpaste, and Chopin's mathematics tutor, but fortunately it's pretty straightforward in explaining the complexities of the language.

Opus-1 requires more than 512K to run, which is bad news for Amiga 500 owners; but there is a cut-down version, *Opus 512*, in the package. This is functionally identical, but uses fewer directory displays, has no Play module (you use a separate SMUS Player program), has no Help functions, and doesn't allow you to compile as much data.

Form and Structure

Opus-1 compositions are written using a wordprocessor. It doesn't matter which wordprocessor – although fancy ones with alternative fonts and pretty colours will probably lead to confusion – and there are specific instructions for using *MicroEmacs*, *Memacs*, and *Ed* included on the disk. Opus-1 then takes your text file, compiles it into machine code and plays your IFF samples or MIDI synths. The language uses reverse Polish notation, which is nothing to be frightened of – it just means that numerical amounts come before the function to which they refer, for instance to set the tempo at100, enter:

```
100 TEMPO
```

The main display consists of three bands; an information section showing input and output channels, memory space free and so on; a work area where your text is compiled; and a lower section of command boxes. These allow you, among other things, to select your text editor; name, save and play files; switch the text display on and off; switch the staff on and off (a display of your compiled music in standard music notation); bring up a help display; switch on and off the high frequency filters on the sound output of Amiga 500s; and select the Interactive mode, in which MCL commands can be entered directly into the system.

Opus itself is a structured language rather like Pascal; it doesn't use GOTOs or line numbers, but a dictionary of words which you can add to yourself, and a number of familiar commands like WHILE and WEND to control loops. Note names are represented by their normal musical letters, lengths by numbers, and

MAKING SENSE OF OPUS-1 MCL

To define a simple bassline in the Opus language you might type:

{BasslineC !8 3; C C E E G G A A B\ B\ A A G G E E }.

Having defined the string Bassline, you can use it as the basis for other definitions, using repeats and transpositions; for instance:

{Basstrack 16 (Bassline) }

would create a track which plays the Bassline phrase sixteen times. Because the maximum number of loops is 65,535 and loops and section calls can be nested up to 64 deep, you can create compositions months long

Chords of up to 64 notes are defined using square brackets, for instance [C E G B\ ]. Up to 48 simultaneous tracks can be created, but remember that if your final composition is to be played back using Sonix or another existing music package, you may well be limited by the number of simultaneous voices it can handle.

octaves by different punctuation marks.

Instruments are defined by filename or MIDI channel, and you can define your own time signatures, tied notes, volume changes, random elements and rhythms. You can also use MIDI commands for pitch bend, channel pressure and so on. There's a straightforward tune player routine on the disk, and a SMUS-to-Opus file conversion program included on the so you can also import and edit tunes created with other packages.

Opus-1 MCL is a fascinating program, but, at a bag of crisps short of £100, I can't imagine anyone other than balding French academics actually wanting to use it to create music. Music is, after all, meant to be an art rather than a science – isn't it?

Ladbroke MIDIStudio

£99.00 ■ All STs ■ Ladbroke Computing, 33 Ormskirk Road, Preston, Lancs, PR1 2QP (0772 203166)

It's always nice to see a British company taking on the American and German software houses at their own game, but usually the lack of R&D investment shows though in the final quality of the product. This certainly isn't the case with *MIDIStudio*, which is packed with good ideas and which is very polished and professional throughout.

You may have heard of Ladbroke Computing through their hardware products such as image scanners; this is their first venture into music software, and it's well-pitched to capture the higher end of the amateur market.

The first thing you'll notice about MIDIStudio, which operates in mono or colour, is that it doesn't use GEM as such. The main screen display uses a metallic bas-relief style which wouldn't be out of place in a space shoot-'em-up. Still, it's not gimmicky and it manages to cram a huge amount of information onto the screen at once. There are several diffrent screens for the various functions which are controlled by a menu bar at the top of the screen.

The program is a very powerful twenty-track sequencer which offers most of the facilities of packages costing up to four times the price.

MIDIStudio comes with a cartridge-port dongle and a tongue-in-cheek 30-page manual. The 20 separate track labels appear across the top of the screen, the main feature of which is a unique real-time mixing "slider" display. Try loading one of the demo tunes – for instance the impressive version of John Williams' Star Wars theme – and hooking the ST to your MIDI synths. You can then change the volume of each separate track in real time, by pulling the sliders up and down with the mouse. Tracks can also be in Play, Record, Mute or Solo mode. This is an intuitive form of mixing which would be difficult to emulate on many other sequencer packages.

Each of the 20 tracks can hold up to 100 phrases, recorded in real time or step time, each of which can include a full range of control information such as velocity, pitchbend, and patch changes. If you want to filter out any of this information to save memory, you can call up a dialogue box in the middle of the screen by clicking on a command icon. In the same way you can set different note quantise levels (only up to 24ppqn, which isn't very exact in comparison to more professional packages), track transpositions, MIDI data displays and so on. It's also possible to save pages of text notes with each song – reminding you, for instance, about effects settings or synth patching.

The most familiar part of the program is the tape-transport section at the bottom, where you'll find the usual Play, Record, Fast-forward and Pause controls, as well as displays of the synchronisation options, time signatures, tempo and so on. You can, of course, use MIDIStudio as your master clock for drum machines, or have it driven from an external MIDI clock (including Song Position Pointers), tape-to-MIDI sync system or 24ppqn pulse.

MIDIStudio certainly deserves consideration if you haven't yet chosen a MIDI sequencer package; it may well do everything you want without the cost or complexity of better-known packages.

MIDIStudio

for

- Expensive and powerful sequencer
- Good graphic display

against

- Not yet compatible with other sequencers
- Dongled – yuk!

features 0 1 2 3 4 5

performance 0 1 2 3 4 5

ease of use 0 1 2 3 4 5

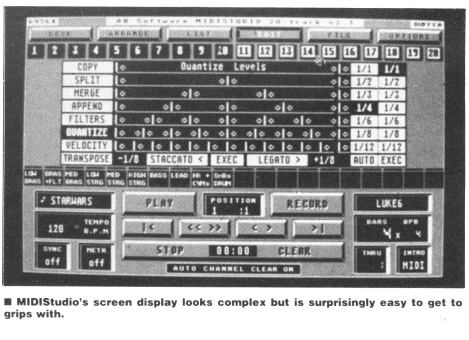
manuals 0 1 2 3 4 5

format value 0 1 2 3 4 5

A NEAT TURN OF PHRASE

MIDIStudio uses the increasing popular "phrase-based" arranging system, which operates more like older hardware sequencers than like newer software packages such as *Steinberg Pro-24*. After defining a number of short phrases, you use the graphic arrange window to click-and-drag phrases, forming the tracks you want. You can even drag phrases from one track to another if you wish, then use transpose and edit functions to build up songs.

MIDIStudio can also function as a system exclusive data filer, allowing you to record voice and sequencer data from other MIDI-compatible devices.



■ **MIDIStudio's screen display looks complex but is surprisingly easy to get to grips with.**

ON-LINE HELP

Registered MIDIStudio users have access to a telephone helpline, and can even have customised versions of the program created (for a small fee!). Updates in the pipeline include MIDI standard song files for transfer to other sequencers, a score writer, and a drum machine matrix rhythm creator, though it may then be unable to run on an unexpanded ST.

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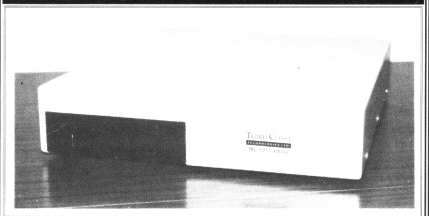

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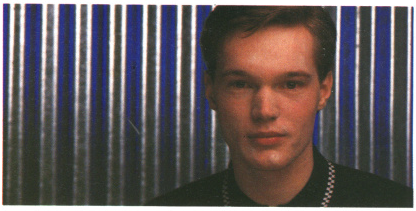
ST Amiga Format's unique dual format disk gives you the best of both ST and Amiga worlds! Whether you're a joystick jockey or a machine code maniac, JASON HOLBORN takes you through the month's goodies.



DISK EXTRA

ST

New to the ST? See page 40 for full loading details

ARCHIPELAGOS.....35
Experience the ultimate in three dimensional gameplay. Gasp at the superlative graphics and gulp at the absorbing gameplay. With *Archipelagos*, you've never had it so good!

REPLAY 3.....36
So you've finally taken the plunge and treated yourself to our DIY sound sampler kit? But what software are you going to use with it? Look no further, as we've got the fabulous *Replay 3* for you to play with.

CHORDEX.....34
Another musical treat this month comes in the form of *Chordex*, a program that aims to teach you all you ever wanted to know about chords. Connect up a MIDI device and it'll even play them for you!

PICSWITCH 7.....34
We've already published *PicSwitch* on a past cover disk back in Format's youth, but this is a vastly improved version. It's friendlier and comes packed with more features than I have fleas... er, than dogs (do get on with it – Ed)

FAST MOUSE.....38
Does your mouse pointer often feel left behind? *Fast Mouse* is a small but very useful desktop accessory that will have your mouse pointer darting around the screen as if it were wearing roller skates!

AMIGA

New to the Amiga? See page 40 for full loading details

BLOOD MONEY.....34
Experience Psygnosis' latest and greatest release from ace programmer Dave Jones, author of the highly successful *Menace*. This one's so hot that you'll have to wear an anti-radiation suit to play it!

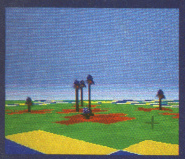
FILE REQUESTER.....35
Do your Amiga programming masterpieces lack that certain something? Could it be a decent file requester? If you program in a language such as C or Assembler, then you can easily add that professional touch in a matter of seconds.

DISKX.....38
The Amiga disk operating system is renowned for its talent for chewing up disks, but with this handy little program you can sleep easy in the knowledge that your data is safe from malicious disk drives.

SETKEY.....36
SetKey is a true example of the quality of ST and Amiga public domain software. This program once sold for over £35; now it's yours for nowt. *SetKey* lets you set up your keyboard exactly as you require it.

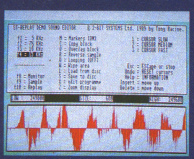
FOUR.....38
Two games on one disk? Yes, it's true. We are so good to you! *Four* is an implementation of the classic board game, *Connect 4* which is sure to keep the more serious gamesters among you happy for hours.

ARCHIPELAGOS



Experience the ultimate in 3 dimensional games. Archipelagos will appeal to gameplayers of all ages.

REPLAY 3



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BLOOD MONEY

Enjoy the hottest arcade action this side of the Universe with Psygnosis' latest mega game.

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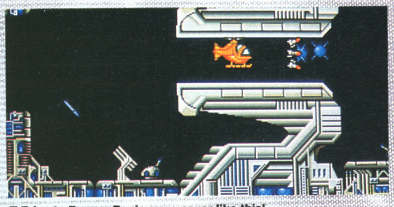
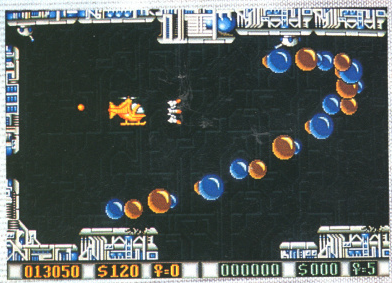
SEE PAGE 40

Got a brill idea for a program? Get it written and send it to us and you could win a share of the dosh.



■ Trips to Bognor Regis were never like this!



■ You've got yourself the hardware. Now it's time to get down to some serious alien wasting.

AMIGA

BLOOD MONEY

PROGRAM: By Psygnosis
MACHINE: All Amigas
FILES: BLOODMONEY

What would be your idea of the ultimate holiday? Spending two weeks with the cast of Neighbours perhaps? How about a mud wrestling seminar in the Swiss Alps? Be assured, whatever you chose, it's going to be tame compared to what the people of the planet Venus get up to in their spare time.

The name of the game is alien safari. For just a few credits, you get the chance to fly into any one of four alien infested planets and destroy as many of the suckers as your joystick finger will allow. Whenever you destroy an alien, you will be rewarded with a bounty; the more aliens you kill, the more credits you earn. Once you've earned enough credits, you can quickly pop into any of the munitions plants scattered on the planets and equip yourself with some groovy alien-wasting hardware.

However, there's only one snag. These aliens are not going to sit back and let you waste them. Why they object to having white hot plasma energy from a laser cannon melting their brains, is hard to understand. The fact remains, you'd better be careful or you'll end up more skewered and fried than a shish kebab.

Getting going

You can book your trip on an alien safari by either double clicking on *Blood Money*'s icon on the Workbench, or alternatively, by inserting our cover disk at the 'Insert Workbench' prompt when you first turn on your Amiga. You'll need to take along some stout walking boots, a packed lunch and some waterproofs... oh yes, you'll also need a joystick plugged into joystick port two.

■ Need some extra weaponry? You'll need the cash first.

ST

CHORDEX

PROGRAM: By G.Franklin
MACHINE: All Colour STs
FILES: CHORDEX.PRG, CHORDEX.DOC

Anyone who has tried to learn to play either a keyboard or a guitar will to tell you that it most certainly isn't an easy task. With all those chords, your fingers can often end up tied in a knot! What about all the strange names that musicians give chords? Could you play 'A Sharp diminished'? If you're a suffering musician, then *Chordex* is for you.

Chordex is a very simple, but very useful, program that aims to teach you all the different chords on both a music keyboard and a guitar fretboard. All you have to do is point at the particular note in question – select whether it is major, minor or diminished – and the chord will be displayed on screen on both a keyboard and guitar fret board. If you have a MIDI keyboard or sound module plugged into your ST, *Chordex* plays the chord through MIDI.

Getting going

You can load the program by double clicking on the appropriately-named icon from Desktop. If you wish to hear the chord, you must plug a MIDI device into the 'MIDI OUT' port of the ST. Full instructions are available within the *Chordex* folder.

ST

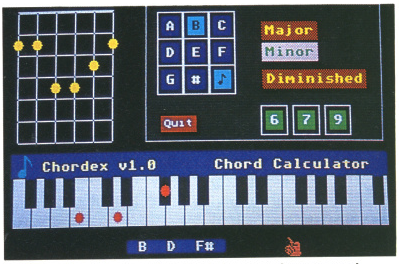
PICSWITCH 7

PROGRAM: Public domain
MACHINE: All STs
FILES: PICSW7.PRG, PICSW7.DOC

One very convenient feature of the Amiga is its standard file format, IFF. When you produce a picture on the Amiga, chances are you'll be able to load it into any other paint package without any modification whatsoever. Unfortunately, the ST is not blessed with such a standardised file format; the machine has over 10 different types at the last count! What do you do therefore if you want to convert a Tiny picture into Degas Elite format or a Degas hi-res picture into low-res Neochrome? Use *PicSwitch 7* of course!

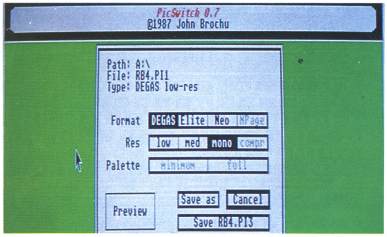
PicSwitch 7 is the latest release of the popular screen conversion program that we first published on issue one's cover disk. This latest release has several very powerful features that merits its re-appearance.

The original *PicSwitch* only handled two file formats,



■ Chordex in action. Learning chords has never been so easy!

■ PicSwitch's impressive resolution switching capabilities in action.



■ Once you've loaded your picture, just press S to save it in any resolution and any file format that you desire.

Degas and Neochrome. This latest release handles the compressed Tiny file format. Another very handy feature of *PicSwitch 7* is its ability to switch the resolution of any picture. If you have a high resolution picture you can have it converted to low resolution in a jiffy. Also, if the resolution of the picture you are trying to load is different from the resolution your ST is in, *PicSwitch* will automatically convert it to your current resolution. Very handy indeed!

Getting going

You can load *PicSwitch 7* by double clicking on the PICSW7.PRG icon on the Desktop. Full instructions, including details of all the different keys needed to operate the program, are included within the *PicSwitch* folder.

AMIGA

FILE REQUESTER

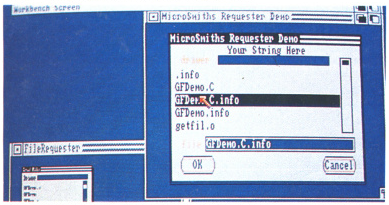
PROGRAM: Public domain
MACHINE: All Amigas
FILES: GFDEMO, GFDEMO.C, GETFIL.O

Calling all C and Assembler programmers! As you already know, the Amiga has no standard file requester built into ROM (but look out for KickStart 1.4). This means that unless you're an ace Intuition programmer, your programs will end up having to use the old and trusty 'Please type in filename' prompt. This is fine for simple CLI-based programs, but for more complicated programs it can cause any number of untold problems.

Take a look around at any programs available within either the public domain libraries or even commercial products and you'll notice that although the Amiga doesn't have a standard file requester, most programs seem to use the same file requester. This file requester is actually a public domain add-on module written by those rather clever chaps at MicroSmiths in the States. The MicroSmith file requester provides a very easy way of incorporating a requester into your own programs with a minimal amount of fuss.

Getting going

Incorporating the MicroSmith file requester into your own programs is simplicity itself. All you have to do while writing your source code is to call a function called `getfile()` and pass it the appropriate parameters. Once you've written your program, compiled it as usual and then passed it through the Amiga linker, you'll have to create a linker 'make' file and include the file `getfil.o` as one of the modules to be linked in. Once everything has compiled/assembled and linked successfully, your program is now ready to use. Full instructions on using the file requester, including demo source, are included within the file gfdemo.c.



■ You to could have this lovely file requester within your programming masterpieces.

ST

ARCHIPELAGOS

PROGRAM: By Logotron
MACHINE: All colour STs
FILES: ARCHPLGO.PRG, TITLE1.PI1, ARCH.DAT

Along time ago the universe was ruled by the powers of the mind. The centre of this energy radiated from the Ancients, a race of immortal humans who controlled and regulated the universe. Together, the power of their minds created a thousand worlds, each an island in space where the ancients met, talked and drank tea.

Then, one day, the Ancients turned their minds to one planet in particular and they imaged oceans, continents and finally life. From these early beginnings, civilizations grew.

The sight that met their eyes was of a thousand paradise planets, each an island in space. The Visitors liked the Archipelagos so much that they staked claim to them by placing an obelisk of power on each planet, each being a sentinel of their power.

■ Just look at those graphics.

The Ancients tried to 'de-imagine' the Visitors, but it was too late, the obelisks fought the powerful minds of the ancients and won. The thought of being 'de-imagined' made the Visitors mad and so, one morning while birds sang Aeolian harmonies, the Visitors slew the Ancients and banished their soles to eternal suffering.

The death of the Ancients had a catastrophic effect on the many worlds that made up the Archipelagos. Where flowers once bloomed, eggs filled with poison lie waiting for a spark of elemental energy to free their deadly contents. Where birds once sang, evil necromancers twist and mutate the very fabric of the Archipelagos. The Visitors have long gone, but result of their work still remains.

You must rid all the Archipelagos of the evil power that destroyed the Visitors. Each Archipelago has several stones scattered around it, and somewhere there is the special obelisk. To remove the power, you must destroy the obelisk. To destroy the obelisk, you must first destroy all the stones that supply it with its energy. To do this you must join each stone to the obelisk. Once all are destroyed, you have 90 seconds to finish off the obelisk. Sounds easy? Don't be too sure!

The game is played using both the keyboard and the mouse. F1 builds up the square of land currently under the cursor, F2 displays the game map and F3 rotates you by 180 degrees. Pressing the left mouse button on a green square will move you about. Note that you can only travel on the green squares.

Getting going

You can load Archipelagos by double clicking on the ARCHPLGO.PRG icon.

■ On one the many thousand Archipelagos created by the minds of the Ancients.

AMIGA

SETKEY

PROGRAM: Public domain
MACHINE: All Amigas
FILES: SETKEY, SETKEY.DOC

One of the most confusing aspects of AmigaDOS is that of key maps. How many times have you pressed a key on the keyboard only to see the Amiga print something entirely different? The reason for this is that the Amiga keyboard is configurable to suit the needs of the particular country it is used in. For example, if you tried getting a pound sign on a US keyboard, you'd probably end up with a dollar symbol being printed.

The Amiga reads these keyboard definitions from what are known as 'keymap files'. A keymap file contains information on what the Amiga has to print whenever you press a key. By using keymaps, it is possible to completely customise your Amiga keyboard; just think, you can have the Amiga print an A for every key pressed. Now that would be useful!

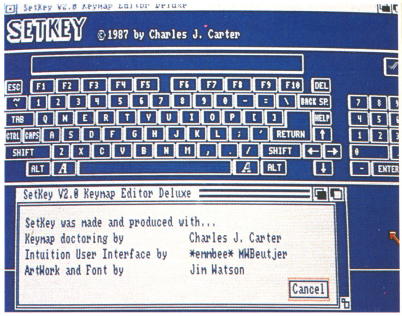
SetKey, as you've probably already guessed, is a program that allows you to create your own keymaps or modify existing ones. The program was originally written for the A1000, but it works without problems on A500s and A2000s. The only difference between the A1000 keyboard and the A500/2000 keyboard is the extra keys on the numeric keypad.

To create a keymap from scratch, click on the key you wish to redefine. A window will pop up containing the current values assigned to that key. Edit the current definition to your requirements and then select 'modify keymap'.

Once you've successfully finished redefining the keyboard, save it off to disk and exit the program. To use your new keymap, enter the CLI and enter

```
System/SetMap filename
```

where filename is the name of the file holding your new definitions.


SetKey V2.0 Keymap Editor Deluxe
SETKEY ©1987 by Charles J. Carter
SetKey V2.0 Keymap Editor Deluxe
SetKey was made and produced with...
Keymap doctoring by Charles J. Carter
Intuition User Interface by Kennbee* MMBeutjer
ArtWork and Font by Jim Watson
Cancel

■ **Just select the key you want and then type in the definition. Customised keymap here we come.**

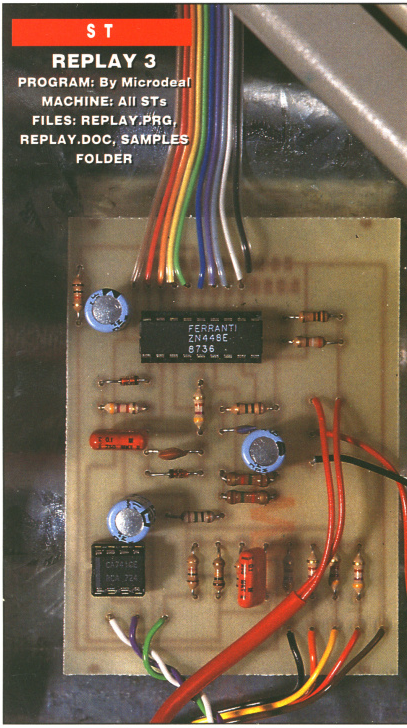
Getting going

You can load the utility by double clicking on the *SetKey* icon from Workbench. If you have expanded memory (1Mbyte or more), you may have to switch it off to use the program correctly. Full instructions are available within the *SetKey* drawer.

ST

REPLAY 3

PROGRAM: By Microdeaf
MACHINE: All STs
FILES: REPLAY.PRG, REPLAY.DOC, SAMPLES FOLDER



If you've looked through the rest of this month's *Format*, you may have noticed that we're offering a very exciting DIY sound sampler project which will allow your ST to digitise real life sounds. Having the hardware is only half the story: without the appropriate software your digitiser isn't going to do a great deal. But, as usual, *Format* comes to the rescue. We've managed to bring you the sensational *Replay 3* software from Microdeal.

Replay 3 is a complete sound sampling system, and is one of the most powerful available for the Atari. How much are we charging you for this masterpiece of programming? The rather large, over the top, grossly inflated price of zero pounds and zero pence. Now don't say we aren't good to you!

■ ***Replay 3* in action. A sample is lying in memory; you can tell this by looking at the graph at the bottom of the screen. Pressing F10 plays the sample.**

The version of *Replay 3* on our cover disk is the *almost* complete version. It is almost complete in that the maximum sampling rate has been restricted to 15KHz and your samples cannot be larger than 250K. The only other minor ommision is the fade in/fade out facility. Features offered by *Replay* include:

■ **Variable sample rates** – you can digitise sounds from 5KHz right up to 15KHz. The higher the sample rate, the higher the sound quality. Higher quality also means memory is consumed quickly.

■ **Reverse Sample** – just press the R key and the sample will be reversed. Siht si yrev lufesu!

■ **Full cut and paste facilities** – a whole host of facilities for editing your samples is present.

Getting going

You can load *Replay 3* by double clicking on the REPLAY3.PRG icon from the Desktop. Complete instructions on using the software with and without a sampler are included within the *Replay 3* folder. G-G-G-Go for it!

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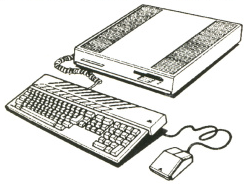

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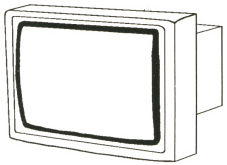

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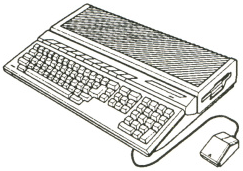

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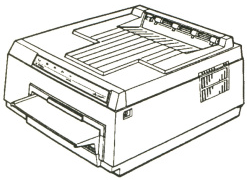

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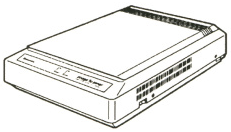

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AMIGA

FOUR

PROGRAM: Public domain
MACHINE: All Amigas
FILES: FOUR, FOUR.DOC

All this alien wasting cannot be good for the soul. What is needed is some really passive, thought provoking, games to keep the old brain in shape. With this in mind *(ho, ho – Ed)*, Format presents *Four*.

Four is a very nicely presented computer version of the classic *Connect 4* board game. The object of the game is very simple, but the strategy needed to conquer it can be very complex indeed.

Your aim is to get four of your counters in a row – either horizontally, vertically or diagonally. Your opponent, the computer, also tries to do the same. You must thwart the computer's efforts if you are to be successful.

One of the nicest things about *Four* is that it is small enough to have running while you have other programs multi-tasking. Just think, if you're waiting for your spreadsheet to perform a complex operation like calculating just how overdrawn you are, you could bring the *Four* screen to the front and you have a quick game while the machine continues working with the spreadsheet. Who said multi-tasking hasn't got a use?

Getting going

You can load the game by double clicking on the *Four* icon from Workbench. After a few seconds of disk access, the game should load ok.

All the game control functions are accessed from pull down menus. These can be accessed by holding the right mouse button down. Full instructions are also available within the *Four* drawer.

■ **Who needs multi-colour, parallax violence when you've got a game as absorbing as Four?**

ST

Is your mouse pointer starting to feel the strain of hours of Desktop hacking? While you may be bombing around the desktop at break-neck speeds, the poor old mouse pointer still seems to trundle slowly across the screen. However, with *Fast Mouse* your mouse pointer need never feel left behind again.

Fast Mouse, as the name suggests, is a very handy little program that aims to make your desktop sessions more productive by speeding up the on-screen mouse pointer.

Getting going

Fast Mouse is a desktop accessory and consequently cannot be loaded with the normal point/double click procedure. To use *Fast Mouse*, you will have to first install it on your boot disk. Do this by copying the file FMOUSE.ACC to the top directory of your boot disk. Once the file has successfully copied, reset your ST with your boot disk in the internal drive. After a few seconds the Desktop screen should appear. Now just move the mouse pointer up to the Desk item and a menu will drop down containing Fast Mouse. Select it, and you're away.

FAST MOUSE

PROGRAM: By S. Higgins
MACHINE: All STs
FILES: FMOUSE.ACC, FMOUSE.DOC

AMIGA

DISKX

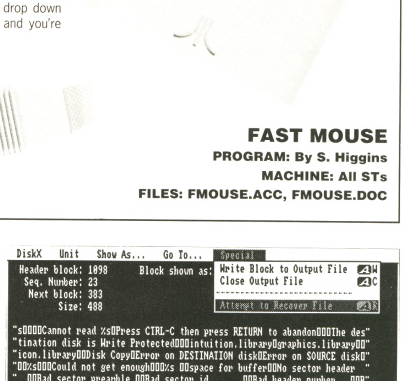
PROGRAM: Public domain
MACHINE: All Amigas
FILES: DISKX, DISKX.DOC

The Amiga disk operating system is not exactly renowned for its kindness to floppy disks. In fact, if you've got a disk full of valuable data that musn't be erased at any cost, fate dictates that sooner or later AmigaDOS will corrupt it. When the unthinkable does happen what do you do? You could start by running the disk through Diskdoctor, but if that fails you've got problems. That was until *DiskX* arrived.

DiskX is a powerful multi-purpose disk editor/analyser that provides you with all the tools you could possible need to enable you to rescue files from corrupt disks.

Getting going

Double click on the *DiskX* icon from the Workbench to load the disk editor. The version on our cover disk needs access to a library file within the *DiskX* drawer and so, during loading, several assignments have to be made which may require you to swap disks. Follow the on-screen requesters and everything should load fine. Full instructions on getting the most from this excellent program are available within the folder.



■ **DiskX in action. Here, DiskX is probing the very depths of our cover disk. DiskX is a very techie tool so be very careful when using it or you could do irrepairable damage to your precious disks.**

Format warning

***DiskX* is most definitely a techie program and should only be used if you really know what you're doing. Do not casually play around with it on our cover disk or any disks containing valuable data; one changed byte on a disk could have a disastrous effect on the rest of the disk. Don't say we didn't warn you!**

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HOW TO USE THIS DISK

The *ST Amiga Format* cover disk is a special format disk which both the ST and the Amiga can read. Even if you are a seasoned computer user, please read these instructions carefully or you could permanently damage your copy of it.

The first thing you must do is make a backup copy of the disk. Because of the special format, the normal disk-to-disk copying methods, as recommended in the Amiga and ST manuals, won't work. Instead you will need to format a blank disk and copy the files individually. Don't panic, this isn't at all difficult.

ON THE ST (assuming a single drive machine)

1. Take a blank disk and format it in the usual way.
2. With the blank disk still in the drive, double click on the A: drive icon to open up the (blank) contents window.
3. Now drag the icon for drive B: into the open window of disk A. This will copy all the files one by one off the master disk to your new disk. *Make sure that the master* ST Amiga Format disk is write protected (the sliding tab should be back so the hole is open) and put it in the disk drive when asked for disk B.
4. You will now be prompted at various times to insert disk A and disk B while copying takes place. There will be a lot of swapping to do on a single drive ST! Disk B should be the master disk, disk A your newly formatted copy.

If you want to cut down on disk swaps, you can use the Eternal RAM disk program provided on issue 5's disk as an intermediate step.

Note that our special cover disk contains about 30K more files than will fit on a standard single-sided ST disk. If you own an old 520, you'll have to be selective and copy only the files you want.

ON THE AMIGA (assuming a single drive A500)

1. Start your Amiga up with your normal Workbench boot disk.
2. Take a blank disk and initialize it in the usual way.
3. *Make sure that the master* ST Amiga Format *disk is write protected* and put it in the disk drive. Double-click on the disk icon that appears. Drag any icons you see in the contents window onto the 'RAM disk' icon.
4. When the disk activity light has gone out, put your newly formatted copy disk in the drive instead. Double-click on the RAM drive icon to open its window, and drag program icons from that onto the new disk icon. This copies the files one by one.

The programs may not all fit in the RAM drive at once on an A500 – do whatever will fit, then after step 3 delete them from the RAM disk by clicking once on each and, holding the right mouse button down, selecting discard from the Workbench menu. Repeat steps 2 and 3 for the rest of the icons.

USING THE PROGRAMS ON THE ST

When you turn the ST on and put your disk in the drive, you will see a window opened with the contents of the disk displayed.

Each program will have a number of files on the disk. A program called DOUGAL, for instance, will either have an icon named DOUGAL.PRG or there will be a folder called DOUGAL. If there is a folder, double-click the left mouse button on it to open it up, and you should see DOUGAL.PRG inside it. Just double-click on a program's .PRG file to run it.

Each program should have a corresponding .DOC file – double-click on this and then choose 'Show' from the box that appears to read the detailed info from the author. Always read the documentation before running the program.

Programs described as 'desk accessories' don't have .PRG icons to be clicked on – in this case special running instructions are given with the program descriptions.

ON THE AMIGA

The main program will automatically run when you turn on your Amiga and insert the cover disk. To get at the rest of the items, you will need to run up Workbench first of all from your normal start-up disk. Once at the Workbench, put the *ST Amiga Format* disk in the drive and double-click on its icon to open it.

Most programs on this month's cover disk have icons assigned to them. To run any of the programs, just double click on the programs icon and after a few seconds disk access, the program should load ok. In the case of DISKX, when you try to load the program the Amiga will prompt you to insert your Workbench disk a couple of times; follow the onscreen requesters and DISKX should load fine. For further instructions on using the Workbench, refer to the Introduction to the Amiga manual that came with your machine.

When you click on a documentation file, a new window is opened and the text is displayed a screenful at a time. Press any key to move from one screenful to the next, or click on the close gadget in the top left hand corner of the window to cancel the display.

Jason Holborn

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For ❑ ST ❑ Amiga

Approximate total size of files in kilobytes.....K
(we cannot use programs longer than 200K; shorter submissions, under 100K, stand the best chance of publication)
It is a:

❑ Game
❑ Business utility
❑ Music program
❑ Novelty
❑ Technical tool
❑ Art program
❑ Educational
❑ Other.....

BRIEF DESCRIPTION .....

.....

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Checklist (please tick):

❑ Stamped addressed envelope for return
❑ README.DOC explanation file on disk
❑ Printout of README.DOC file (if possible)
❑ Name, address, machine type written on label
❑ Disk certified virus free

IMPORTANT – Please sign this declaration:

This program is submitted for publication by ST Amiga Format *magazine. It is my own work and has not been submitted for publication elsewhere. I claim my national fame and glory.*

Signed .....
Date...../...../.....

If you've got any programs for either ST or Amiga which you think other readers would find useful, interesting or amusing, we'd like to know
1. Make sure your program is foolproof to use.
2. Create a file called README.DOC on the disk which explains exactly how to use your program.
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The Atari Computer Show is back – with many new products and developments. Atari has grown to be one of the major players in the computer world, supported by an incredible wealth of top quality applications, games and utilities – all on view at this show.

MIDI

All the latest hardware and software in the rapidly expanding scene of micro music will be on display, including keyboards, samplers, sequencers and professional studio software.

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CAD

Computer Aided Design has grown to become one of the most important uses for modern computers. With a CAD system you can design houses, cars and electronic circuits – in a fraction of the time it would take you with pen and paper.

With the high speed and powerful graphics of Atari micros it's hardly surprising that bigger and better CAD programs are pushing back the frontiers all the time.

And only at the Atari Computer Show can you see all the latest systems under one roof.

BUSINESS

Many companies will be demonstrating their latest software and hardware, specially designed to release the full business potential of Atari computers.

As well as products for the 8-bit and ST, you'll be able to try out applications for the powerful Atari PC compatible series.

And you'll also be able to get expert advice from professionals.

DTP

The art of combining text and pictures is big business nowadays because, with a low-cost DTP program, you can create anything from a club newsletter to a monthly magazine or book.

At the show you'll be able to try out the latest scanners, digitisers and super-fast programs, and get a first-hand glimpse at the way DTP is set to develop in the future.

GAMES

Atari computers are renowned for their ability to run fast-action arcade-quality games.

The range of new software on show will demonstrate how the power of these machines is continually being stretched, producing faster and even more addictive games with superb graphics.

The winning entry in the STOS Gameswriter of the Year Award will be revealed, and several new exciting STOS accessories will be shown for the first time.

If you're a keen game player, you'll find there's so much on offer at the show – you're guaranteed a real treat!

DON'T MISS IT

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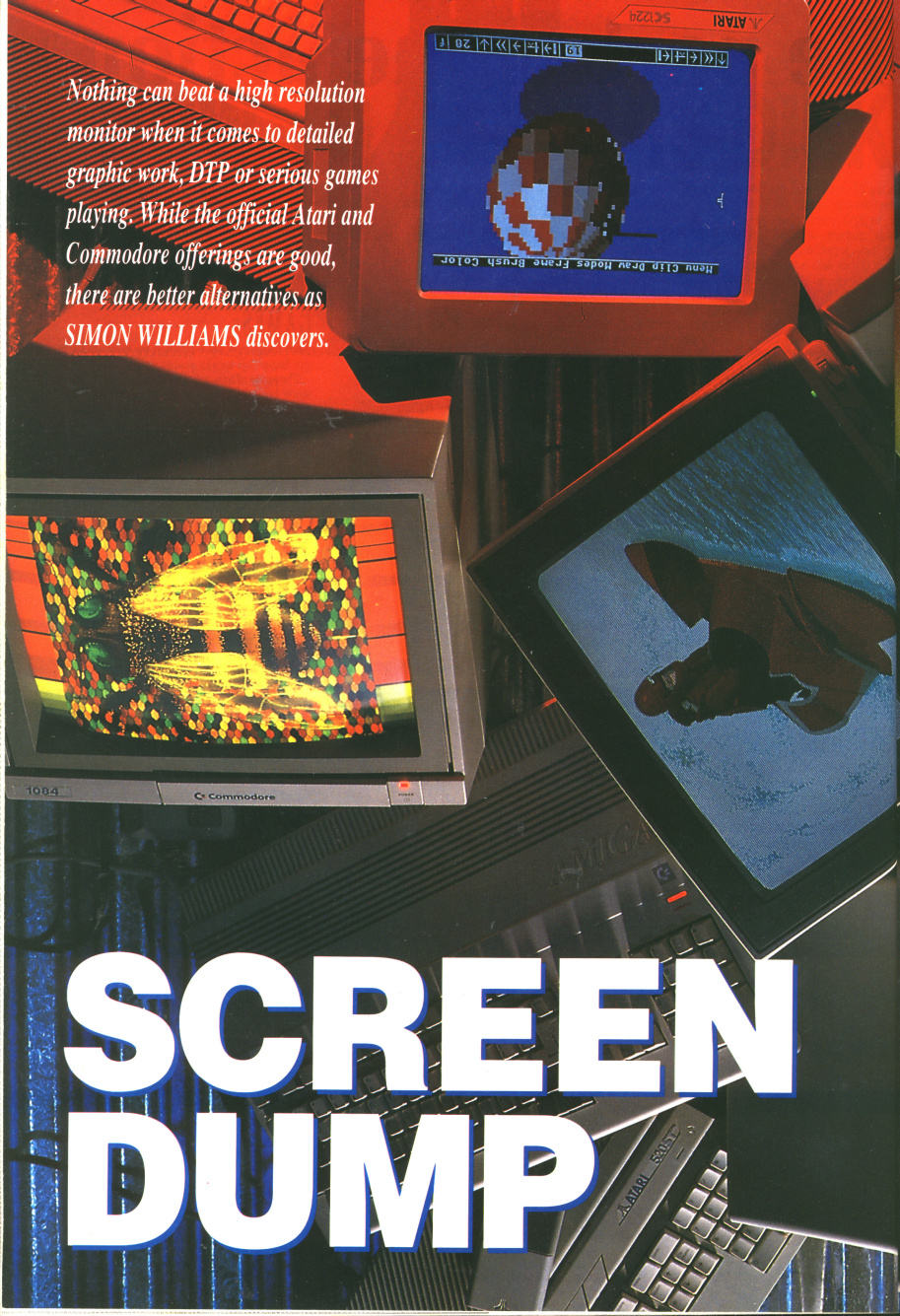
SCREEN DUMP

Nothing can beat a high resolution monitor when it comes to detailed graphic work, DTP or serious games playing. While the official Atari and Commodore offerings are good, there are better alternatives as SIMON WILLIAMS discovers.



If you use your ST or Amiga regularly, or want the added convenience of being able to use all ST modes on the same display, there are various options open to you. They all cost money, but then you expected that, didn't you?

For ST owners, who are blessed with decent colour and mono monitors, the spend can be quite high before any significant improvement is noted. If you're buying for the first time, though, your best bet is to buy a machine without a monitor and consider the extra facilities of a multisync. You can then add the monitor of your choice for a comparatively small extra outlay.

On the Amiga the need is rather more pressing as the supplied monitor is not as sharp, or of similar resolution, to the ST's. The advantages of a better monitor are less eye fatigue, a brighter and better looking display and confidence that there's little Atari or Commodore can throw at you that you won't be able to display – except interlaced mode. This won't be fixed by a multisync, unless you also buy the *flickerFixer* board, for a further £380. This is probably only worth it if your main interest is in video applications.

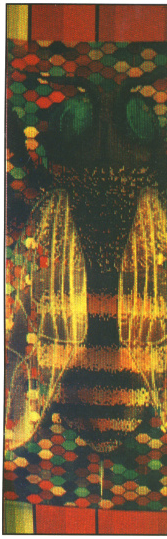
Alongside normal monitors, there's a breed called multisync. The principle of multisync monitors is that they can sense the vertical and horizontal scan rates of the incoming signal and adjust themselves accordingly. This feature was originally developed to cope with the multiplicity of different graphics standards on the IBM PC. It has spin-off benefits for both ST and Amiga users, though.

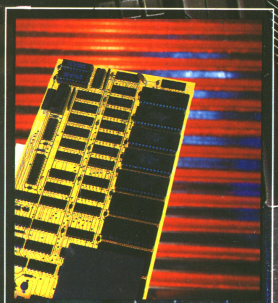
An ST running into a multisync monitor can display all three display modes, including the monochrome hi-res output. Once again, though, you'll need a special lead with a switch mounted in it to flick from colour to mono modes. Beware, too, that your ST will reset when you flick the switch, so you can't maintain programs or data.

Current Amiga users get no special benefit, though of course the screen resolution and clarity is of a very high order. When the new Amiga enhanced chip set comes out of Commodore, though, it will support extra hi-res modes which will only run adequately on a multisync monitor. If you're looking for a good investment in the future, a multisync monitor will keep your ST or Amiga happy for years.

If you like the idea of a multisync monitor, but can't run to the £400 of the Quadram, you could consider the mono NEC Multisync GS (around £150). All ST and Amiga display modes supported (except interlace).

There are a lot of monitors available for ST and Amiga; here is a selection we feel are appropriate. Note that the prices quoted are manufacturer's suggested retail prices. You can undercut them considerably by shopping around. Check that your supplier can provide the right leads for your machine, though.





■ **The *flickerFixer* is a de-interlacing display board for the Amiga 2000. The board eliminates the flicker and visible scan lines from the computer display. The board plugs into the video slot of the A2000 and has a socket for hooking up a multiscan or VGA-compatible monitor. Microway at 32 High Street, Kingston-Upon-Thames, Surrey, KT1 1HL (01-541 5466) can supply you with one for £380.**

SUPERSCREENS

You may have seen some of the large A4 and A3 paper-white monitors at the PC or Which Computer shows, normally attached to Macs or PCs. Silica Shop (01-309 1111) are in the process of putting together an A3 Megascreen for the ST at the moment. If DTP is your bag, this kind of monitor could make life a lot easier for you – at a price!

Philips PRO 8CM852

£299 ■ Philips, City House, 420-430 London Road, Croydon, Surrey CR9 3QR (01-689 2166)

This is a single scan-rate monitor similar to the Commodore 1084, but in a revamped case and with several of the more esoteric functions moved from front panel control to the rear. The monitor still has a SCART socket on the back, so standard Amiga or ST-to-1084 leads will work with the PRO. Once connected, the monitor gives a somewhat sharper image than the 1084, but still shows some vertical banding from the ST output. This is not a fault of the monitor itself, but a slight conflict with the colour output of the ST. You have to look closely to see it, anyway.

On the Amiga, the display shows a blacker background on standard text screens, which gives better contrast when working with word processors and most other serious software. The screen is etched rather than having the anti-glare coating of the 1084, and this gives reduced reflection from external light sources. There was a degree of curvature to vertical lines, and the monitor proved sensitive to the position of the Amiga power supply in this respect.

The PRO 8CM852 is a good alternative to the 1084 monitor and costs little more if you buy it at discount prices.

LEADING OFF

One of the major problems with using alternative monitors is making the right connection between them and your machine. Lightwave Leisure (051 630 5003) specialises in producing leads for monitors and printers to almost any type of machine, and their catalogue lists plenty for STs and Amigas.

Quadram MS1420 Multiscan

£399 ■ Silica Shop, 1-4 The Mews, Hatherley Road, Sidcup, Kent DA14 4DX (01-309 1111)

This multisync monitor, from a well known peripheral manufacturer in the IBM PC world, comes at a very attractive price. It is a large unit, swamping a Mega ST for instance, and has controls hidden under a panel on the side and dip switches for colour selection on the back. It's mounted on a tilt and swivel base and has an etched screen for minimum glare.

With a suitable switching lead (like the MVDU-211 from Lightwave) and a gender changer (the Quadram comes with a fixed, male, flying lead), you can display both colour and monochrome screens from the ST on this monitor. Although it is supposed to switch between the two automatically, we had to adjust the vertical hold on the monitor each time we changed over. The colour display was very good, with increased clarity and very little curl at the corners of the screen. The high resolution .31 dot pitch tube gave a pixel-sharp display, much clearer than the Atari units.

On the Amiga the display was of good quality with high contrast, but horizontal and vertical position controls had to be set against their stops in text screens. The screen shape was still distorted, with balooning about a third of the way down the screen. It seems a pity that the potential benefits of the multisync screen were diminished by these shortcomings. On graphics screens, this effect was not so marked, and for games playing the screen gave a superb, arcade quality result – though with some background colours very faint.

Kaga Taxan MultiVision 770 Plus

£746 ■ Taxan UK, Taxan House, Cookham Road, Bracknell, Berks RG12 1RB (0344 484646)

The Kaga unit is a top of the range monitor with all the features you'd expect from its £700 RRP. It has an etched screen, numerous controls and a high resolution 0.31mm dot pitch. It will accept analogue and digital input from ST and Amiga, though we had trouble getting a stable picture out of an ST. The lack of a horizontal hold control was largely responsible for this, as the image was obviously there, though scrolling too rapidly to use.

The Amiga ran the monitor more sensibly, giving a sharp clear picture but with some sag in the top centre. Both games and text were displayed clearly, and the background colours were visible too! All in all a strong contender for your money, if you have a lot of it.

■ As you've probably noticed from the monitors in this survey, compatibility with Amiga and ST is a hot issue. Nearly all high-quality monitors are tweaked for the IBM PC. The soundest advice for anyone thinking of changing monitors is to make sure you try out the monitor with your machine, and with a variety of different software. There's no doubt you can do better than the standard Atari and Commodore monitors, but it takes some effort to get all the compatibility problems sorted out.

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Buy a monochrome monitor with any 1040 from above for £110.00 extra	
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Calamus

If you can't wait for the official UK release of DMC's monster DTP package, here's what the American grey import version offers. You might not get the user support you're after, but at barely half the official price can you complain? ST DTP will never be the same again as MARK HIGHAM discovers.

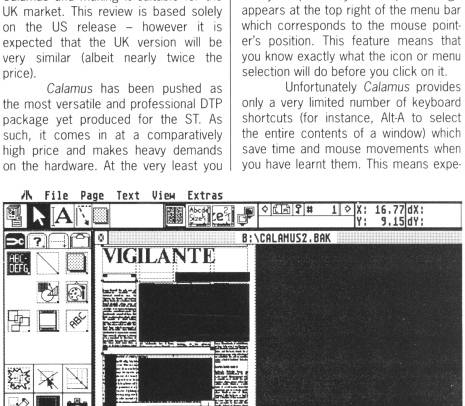
£259.95 ■ Mono STs with 1Mb, 4Mb and hard drive recommended ■ Gainstar, Unit 1, Rear of 7 Wellington Road, Sandhurst, Surrey GU17 8AW. Tel: 0252 877431.

After discovering that the UK version of *Calamus* wouldn't be due for months, and noting that the American release had been out for some time, Gainstar decided enough was enough and imported the American version. Atari are in the process of ironing out so-called bugs in the original *Calamus* and making it suitable for the UK market. This review is based solely on the US release – however it is expected that the UK version will be very similar (albeit nearly twice the price).

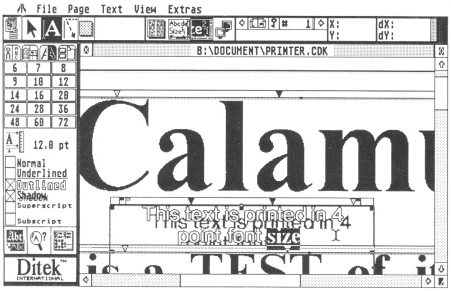
Calamus has been pushed as the most versatile and professional DTP package yet produced for the ST. As such, it comes in at a comparatively high price and makes heavy demands on the hardware. At the very least you will need 1Mb of memory, a double-sided drive and a decent printer. If you intend using the package seriously, a hard disk, the Atari laser printer, a giant A3 monitor and a massive 4Mb of memory are recommended. If you go for a setup that's this comprehensive, then you'll have a system which compares favourably with anything PC or Mac based. And it will cost you half the price.

The basic *Calamus* arena is made up of drop-down menus which call up additional menus; in turn these sub-menus call up further menus. As a result of these extensive menu features, *Calamus* can prove overly complex – particularly for the novice user. This is compensated somewhat by a very handy help facility. A help message appears at the top right of the menu bar which corresponds to the mouse pointer's position. This feature means that you know exactly what the icon or menu selection will do before you click on it.

Unfortunately *Calamus* provides only a very limited number of keyboard shortcuts (for instance, Alt-A to select the entire contents of a window) which save time and mouse movements when you have learnt them. This means expe-



■ **Calamus in action. The front screen is filled with menus and with very few single keystrokes implemented you'll need access to all the icons most of the time. This complexity can make it difficult to use but with all sorts of graphics options and text on offer it can become a powerful package when you know what you're doing. There's even an option to take direct input from a scanner and import it into a picture box, although grey-scales are not supported.**



■ **The fonts are mathematically created from within Calamus so that at the larger sizes they are still perfectly shaped.**

rienced users will be restricted to the work rate of the menu system. Along with the help messages, a special area of the icon display is set aside for displaying keystroke shortcuts (assuming they exist).

Getting it down

Laying out a page with all the various block sizes and page links is what makes DTP such fun; *Calamus'* treatment of this is therefore very important. The correct page size must be picked first – A4 or US letter size, for instance. This differs from the likes of *Fleet Street Editor* which allows you to create a new page and then enter all pertinent information regarding number of columns and guides. *Calamus* operates in a totally differently. The create-page feature lets you set page size, orientation and number of pages. Column guides must then be selected from another menu. This sort of operation reinforces the argument that *Calamus* is often complex just for the sake of it.

Guidelines may be added as a specific number of columns and rows; simple grids can be laid down on top of this. Other options let you snap the text to the various guides, allowing precise layouts.

The next step is to position picture boxes or individual text boxes. Seven different types of box exist – far more than is really necessary. The box types are: ordinary text frames, rotated text, text with headers and footers, plus a selection of graphics boxes. Mouse clicking from the frame mode alternates between the move and size box option, and the draw new box feature. Text can be made to run around these boxes using another menu option. Sadly text doesn't automatically flow around boxes. A versatile range of features allow you to decide whether to run text around the right or left sides of your box, run it over the top or employ a host of piping features to run the text out of one box and into another. By selecting where the text should run around in this way, you can easily decide the basic structure of your layout before importing text.

Where's the text?

As with the majority of DTP systems the intention is to write your text in a word-processing package and then import it later. *First Word* protocols are supported here as well as standard ASCII. However, the real bonus is a special text editor which can be used to examine all text and perform a small selection of editing features. It's not really intended to be used as a primary method of data entry, but simple find and replace options as well as style changes are possible from here. The text appears in one standard font with the control codes – such as style and font size – enclosed in square brackets. It is an extremely fast way of making corrections to data without waiting for the screen to be redrawn with each character – a particularly painful problem associated with both *Fleet Street* and *Timeworks DTP*.

A range of font styles are included on the *Calamus* disk and these may be loaded separately as and when you need them. Style and sizes are adjusted by selecting the correct frame and then highlighting the text using either the mouse or block start and end markers. The new style is selected and the changes implemented. This method can be used to set up your text as justified, centred, ragged right or ragged left. Additionally, you can add a ruler to individual boxes so that tabs can be adjusted in these boxes without affecting the rest of the text. Letter and line spacing can be adjusted in steps of 1/100th of a millimetre.

Text may be imported into five separate clipboards where it can be altered, copied elsewhere or erased altogether. Unfortunately, without any undo option, it's important that you make no mistakes.

Although text is set to run around boxes, the slightest change in the size of a box necessitates reselecting the runaround option. This is a serious problem because it means that the text will react as if the box were at its original shape. When dealing with important layouts where pictures or text boxes are regularly re-sized to accommodate changes in the layout, this can be a terrible waste of time.

Aside from all the standard DTP features, *Calamus* incorporates several extras. Boxes can be set to a specific size and then labelled as proportionally accurate; further alterations will make only proportional changes to the frame size. Text can be adjusted so that it sits at absolutely any angle – this has to occur within a separate box though. Picture boxes too can be set to function at a size proportional to the actual picture being imported. Pictures may be imported in a multitude of formats including the *Degas* and IMG standards.

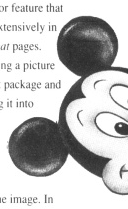
Once you've pummelled your page into a printable form, it may be sent to the printer by first selecting a driver. *Timeworks DTP* is phenomenally slow in this area but there are no such problems within *Calamus* – it prints away without making any major demands on the disk drive.

Onto paper

No matter what the DTP package, ultimately it's the output which matters. *Calamus* is not really aimed at the 9-pin dot matrix printer market even though it is possible to use these printers. *Calamus* is really in a league of its own when used with a 24-pin printer or the Atari laser printer. With 24-pin models, three passes for each line of 24 pixels are made. This is the same as that method as that employed by *Timeworks DTP*; it has proved to give the best quality output for dot-matrix printers. Unfortunately it's extremely slow, often taking in the region of 10 minutes to produce a complex page. The Atari laser printer is supported, as is the industry-standard Hewlett Packard LaserJet, but the lack of the much more flexible Postscript language needed to use an Apple LaserWriter. PostScript is a bad omission as it precludes the use of professional typesetting bureaux and laser printing agencies which are a boon to non-laser printer owners.

VERSUS EXPRESS

Here, at Future Publishing, we use *Quark Express* to lay out our pages. It features all the *Calamus* extras plus one very major feature that is used extensively in the *Format* pages. By drawing a picture in a paint package and importing it into *Express*, text can be made to run around the image. In *Calamus*, text will only run around boxes and not individual pictures.



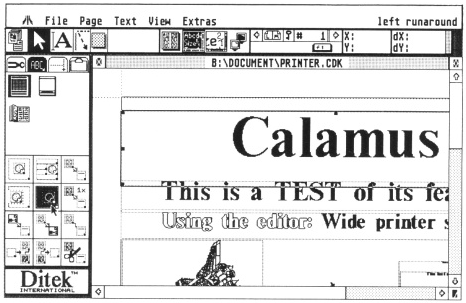
UK AND THEM

The original version of *Calamus* was designed for use in the US, but programmers DMC are working on a special UK version. So far the UK version has taken six months. Because of this wait Gainstar has imported the American version for distribution in this country. The imported version doesn't benefit from the new changes implemented by DMC and there is a question mark over the extent of software support on offer. Gainstar claim they will answer any queries that they can and will contact America should additional problems arise. This is hardly the ideal environment for software support, but it may well be outweighed by the large difference in prices – the UK version of *Calamus* weighs in at a massive £400.

The bugs known to exist in the US version are fairly extensive which is why a new UK version is being worked on. Atari claim that they include problems with importing IMG files and GFA block data but during continuous use the only serious problem we encountered was a tendency to crash when dealing with the clipboard. The difficulties associated with running text around boxes should also be solved in the new UK version as well as vast overhauls on the manual which is currently complex and especially difficult for the DTP novice. A dialog box will let you know when *Calamus* is about to crash on you – that's got to be useful.

VORSPRUNG DURCH TECHNIC

Two versions exist besides the new UK one currently under development. A version was originally written by DMC for sale in Germany and this was then translated to English for sale in America. Unfortunately a vast majority of the error messages were in German which did little to help sales.



■ **Menus within menus. Layout can be very complex; piping text from one box to another and running it around boxes is all done from here.**

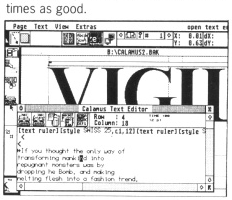
At the end of the day

Despite the legion of features on offer, there's the feeling that *Calamus* is being complex when there's no need and complexity doesn't always equal quality. It's doubtful whether the convoluted array of menus is really essential; a less complicated method of page layout would have been a benefit. Because of all the icons that must be accessed during page layout (and the lack of keyboard alternatives), it's impossible to use *Calamus* across the full screen area. *Calamus* can be made to run on an A3 monitor and this sort of screen is a good investment if your budget can stretch that far.

Calamus is exceptionally slow at times, especially when you run text around different boxes. Only one document may reside in memory at any one time which is restrictive and prevents you cutting and pasting from document to document.

Although *Calamus* has a massive range of features, a better-considered screen display and a wider range of keystrokes would have been worth while.

At the end of the day, *Calamus* is an extremely expensive package (especially when combined with all the hardware it requires). And, as such, there's the feeling that it should provide a fantastic arena for DTP by being simple to use, having high-quality output, and fast auto-flow features. These just aren't delivered. There's hope for the new UK version currently in progress (although the basic operations look unlikely to change). Without a doubt *Calamus* is superior to current ST DTP packages – but, considering it's three times as expensive, it's far from three times as good.



■ **With the basic layout complete, the next step is to import text. The Calamus text editor is a unique idea and makes text alterations a God-send. Characters may be entered without the screen being re-drawn each time.**

■ **With a 24-pin dot matrix printer Calamus can achieve some very impressive results**

TA VERY MUCH

Thanks to Charlie Dancey for his assistance in this review.

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performance 0 1 2 3 4 5

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- Poor manual
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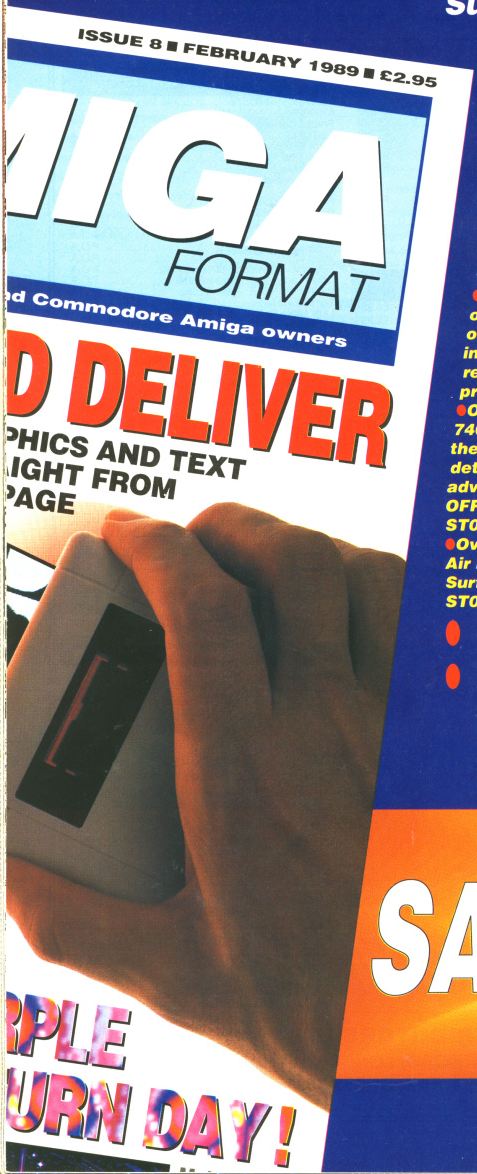

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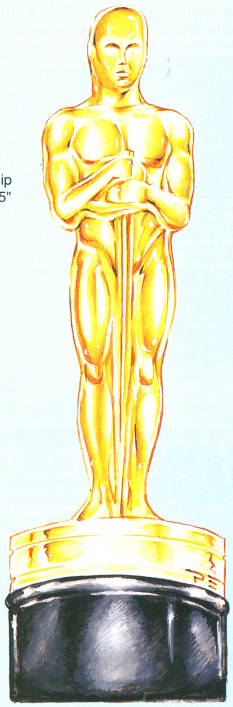

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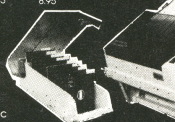
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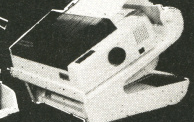
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Computer-aided design gets everywhere these days. Gone are the days when you needed a mega-expensive computer to run the infinitely complex software and a degree in engineering to use it. CAD is even finding its way into games software lately. MARK HIGHAM peers into this elite subject to give you the low down on what CAD's all about and how you can coax your machine into handling it.

GOING MAD WITH CAD

▲ Even Hollywood recognises the potential of CAD; the Last Starfighter is proof of what's possible.

In the beginning life was populated with simple, square, inanimate objects. No-one was very happy with this – the cars gave a lousy ride with square wheels – and soon designers were at work trying to make things more complicated. Eventually pencil, paper and the back of envelope just wouldn't do anymore – and CAD was born.

And then there was life

CAD first came into the daylight way back in the early sixties when IBM installed a DAC console with a brief to revolutionise the world of design. Before that solid models had to be made up to represent a scaled-down version of the engineering design required. This was not only a costly approach but any faults in the design had to be adjusted and then a new model commissioned. As a direct result, the time it took to complete this kind of project could often be unreasonable.

When computers were programmed to hold a three-dimensional image in memory, with modifications made possible via keyboard entries, it seemed that engineering design had changed forever. It was at this point that the terms CAD – computer-aided design – and CAM – computer-aided manufacturing reared their heads.

The benefits of this type of approach are phenomenal. The smallest modification can be made on screen and then the new design tested to examine its feasibility. Initially models were still commissioned but at a much later stage in the process. As time passed however, sophisticated programs made it possible for the computer to simulate certain conditions such as weather effects and stress problems so that the CAD image did not need to be turned into a model until the very last minute. The vast majority of car manufacturers now operate like this – no longer producing a model until the computer has simulated the effect of all possible stress points and wind resistances on the design, thus dramatically reducing costs.

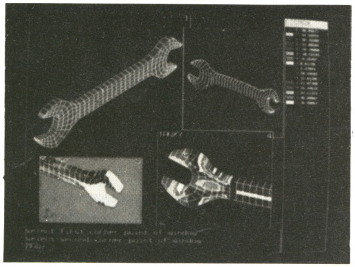
Getting it all in

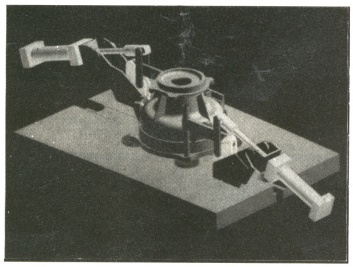
As the years have rolled by CAD has found its way onto many of the smaller minicomputers and even the more inexpensive micros such as the ST and Amiga machines.

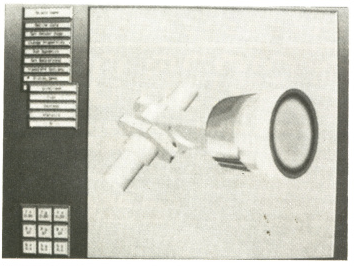
A variety of data entry methods have been explored from the traditional joystick and data tablet inputs to the more light-pen, mouse and even voice entry modules. Most of the ST and Amiga packages are traditionally regarded as low-end systems and, as such,

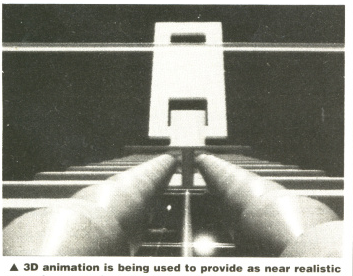
SHOW-OFF

CAD/CAM has become such a major field in the computer industry that an annual CAD/CAM show is held. This year the show was on at the NEC in Birmingham where expensive hardware including robots, plotters and some of the most powerful computers around, fought for floorspace.









▲ 3D animation is being used to provide as near realistic a result as possible. The result is that 3D animation has already found its way into much games software but the real potential lies in creating a walk-through environment where situations and conditions can be imposed on a model and the results viewed even before the design leaves the computer screen to be transformed into a model.

utilise the mouse and keyboard input routines but Commodore's *X-CAD* for the Amiga signifies takes a different approach aimed at the high-end market. A graphics tablet can be used as the input device, with the opportunity to define all your own tablet menus.

Colourful CAD

The vast majority of CAD applications still work very much in 2D to produce the kind of image found in architects' drawings. These give views from all sorts of angles but, at the end of the day, are still in a 2D format. Where the conversion to 3D solids takes place is in the trip from the architect's machine to the client. 2D designs are all very well but 3D pictures are essential for the inexperienced plan reader to get a true idea of the actual design. By using a solid modeller the wire-framed images can be filled in to give a much clearer idea of what's going on.

Where these really come into their own is when you're testing a design for use in certain applications. For example, you could design a crane as a 2D sketch, observing it from the typical architect's orthographic viewpoint. This could then be put through a solid modeller which would create and fill-in the 3D image. You could then test to see if the crane would actually fall over if it was put into use. Rendering is similar to this on the low end of the market. Packages such as Antic's *CAD-3D* for the ST allow you to colour images and view them as 3D solids from all sorts of angles, but this is not true solid-modelling because you cannot examine it as if it were a true solid and apply conditions to the model. Specialist packages already exist which create such a perfect 3D environment that you can even 'walk through' a computer generated image such as a building in real time.

The animation bug

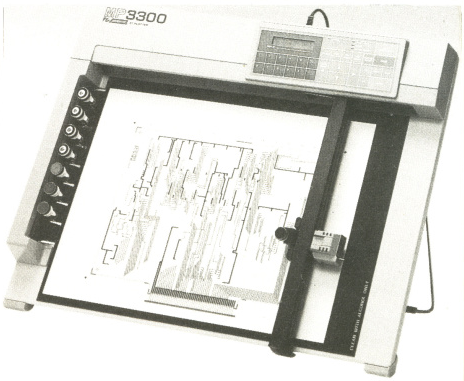
A new range of colour CAD systems are appearing at the high-end of the market which present a kind of Americanised graphical representation of the result with colour employed across the entire design. This approach provides as realistic a model as possible so that the old style radioactive green wire-framed images become a thing of the past. The pursuance of realism has led to sophisticated shading routines as well as the emergence of colour. The next step into animation was a logical one.

Giant screens and specifically-designed software have been created in order to take CAD into the realm of animation and some truly astonishing visual extravaganzas have been made possible. At the recent CADCAM show in Birmingham's NEC, a cinema screen hulk of a monitor was used to demonstrate the kind of 3D animation being used in the CAD industry. Certain television adverts, specifically car ads, have used the same software for their own purposes.

In the games industry

Some of the finest computer games to emerge over the last few years have made the most of CAD principles to support their gameplay. Some have only used them in their opening sequences but others such as *Dragon's Lair*, *Powerdrome* and particularly Incentive's Freescape range of titles have introduced them into the actual game, offering three-dimensional objects which move and act exactly as if they're composed of all three planes.

A small selection of professional CAD packages has recently appeared on the 16-bit scene to provide you with a way of creating 3D pictures and even introduce them into your own animation routines. These can create short car-



▲ Plotters work by drawing an image directly onto paper so the output produced is sharper and can be taken to a higher degree of accuracy but professional CAD is no cheap industry.

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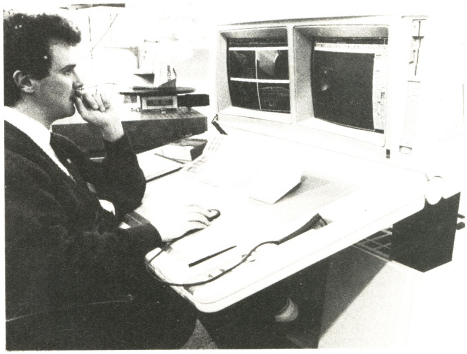
toon animations almost as impressive as some Hollywood films, particularly on the Amiga where a wider range of colours can be employed.

On the ST side one of the most admired CAD packages is *Cyber Studio* which incorporates the remarkably versatile *STEREO CAD-3D* and *Cyber Mate*. It's been around for some time now but far from being a disadvantage, it's actually a major plus. CAD started life in the engineering world so it's hardly surprising that it's a hard subject to master. Antic have realised this by releasing a whole host of supporting packages designed to make the absolute most out of their CAD program. Animation routines allow you to take your 3D image, revolve it, play with it as you wish and even move a variety of different limbs if they're regarded as separate images.

CAD has taken a long time finding its place on the home micro scene. It began as a business application which gave the home user something to play with but it was never intended to be taken seriously. As the wire-framed images began to be filled-in the idea of 3D animation evolved and hence the appearance of supporting animation packages for CAD programs.



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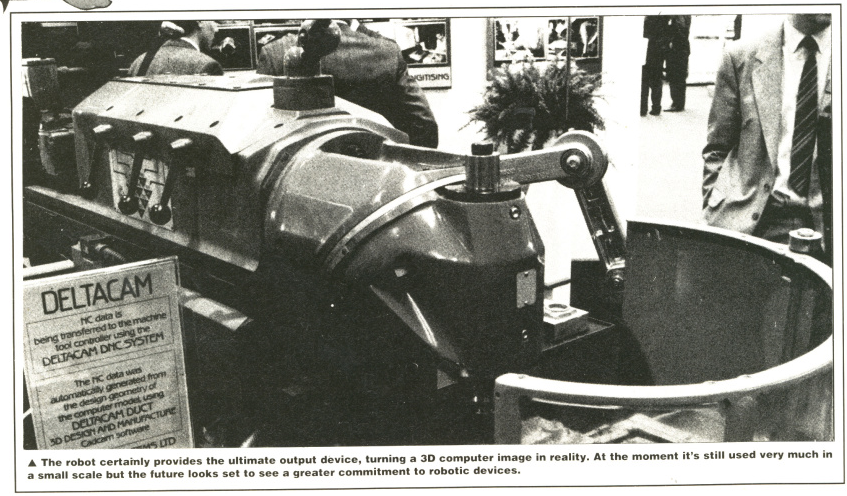
The way forward?

The future for CAD seems to be very much in creating real world images. Already robots are being linked to a computer so that as soon as the 3D image has been satisfactorily designed on screen it can be transferred to another package and outputted directly to a robot. The advantage of this is that 3D models may be created as the next logical step and maybe one day it could even be possible for a full-scale design to be sculpted. Robots will, of course, offer the ultimate output because they can create the solid image previously only seen on screen. This is an expensive way of producing output and is likely to stay as the final step in a design but with clients and managers already demanding as near-realistic a picture as possible, this seems set to satisfy their intentions. A vast range of printers and plotters are already being used to draw up architects' plans without the need for a designer to ever take pen to paper, and as a cheap method of outputting then it remains the leader.

Increasingly developments are being made into the time-saving field of computer animation so that one day even Donald Duck may make his way into the CAD concert. ■

NEXT MONTH

In next month's ST Amiga Format Mark Higham continues his look at computer-aided design by surveying some of the more popular packages available on the ST and Amiga, including Taurus' new X-CAD and the hugely popular ST package, Cyber-CAD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▲ **The robot certainly provides the ultimate output device, turning a 3D computer image in reality. At the moment it's still used very much in a small scale but the future looks set to see a greater commitment to robotic devices.**

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CYBER TEXTURE

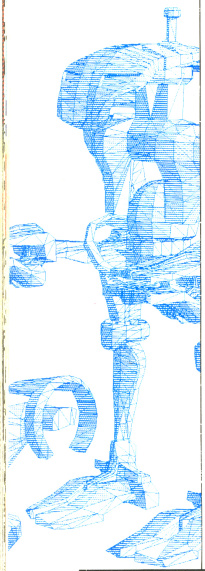
£49.95 ■ Colour STs ■ Electric distribution, meadow Lane, St Ives, Huntingdon, Cambs, PE17 4LG (0480 496789)

A standard *Degas* or *Neochrome* format picture can be wrapped around any 3D shape. The result can be imported into *CAD-3D*. The colours of your original picture are maintained and lighting sources are switched off. Since the result is in the perfect *CAD-3D* format, it can be treated in the same way as any normal 3D picture.

You must load your *Degas* or *Neochrome* file (compressed *Degas* files are also supported) and select an area of your picture using the rubber band. A limited amount of editing can be performed at this stage. Because of the way that *Texture* works, any black in a picture is assumed to be a background and is ignored in the wrapping process.

There is a set of 16 shapes provided to wrap your pictures around as well as an option to design your own simple 3D forms. Unfortunately only small areas of a picture can be used. This increases for larger memory machines, but can be particularly restrictive on a 520 ST. Obviously the less detail included in a picture, the less memory used.

Wrapping takes a while, and unfortunately there's no way of viewing your design from *Cyber Texture*, so the file must be saved and then loaded into *CAD-3D* later. The whole operation takes a while; viewing the result from within CAD is a lengthy process particularly when dealing with complex drawings.



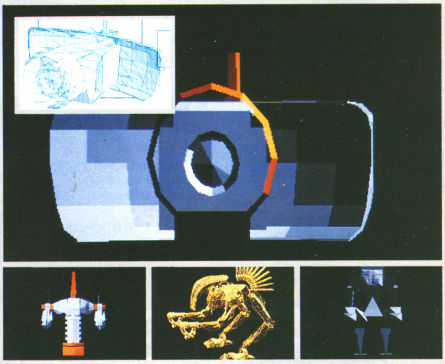
CYBER VIDEO TITLING DISK

£29.95 ■ Colour STs.

This is another recent addition to the busy Cyber stable. Made up of a collection of different files, you can arrange to title your videos with animated scenes particularly useful when used with a Genlock device. 3D fonts can be used within Cyber's *CAD-3D* and then re-coloured, pulled, or stretched. You can create a pen to draw your lettering and even arrange for the Starship Enterprise to zoom into view if you want. Where it falls down is in the complex design methods. Although you're provided with a complete alphabet of 3D lettering allowing you to make up any words you want, handling them is not only tricky but can take hours of work since you need to doctor each letter within the CAD package. Largely for this reason it's not intended to be used as a method of adding credits onto videos.

■ Cyber Texture in action. Scary, innit?

MICROBOT & CARTOON DESIGN DISK £29.95



The first to wander up the CAD path are Antic's new design disks – the Microbot and Cartoon disks. These feature a range of images which can be manipulated within CAD 3D. They come as sections – for instance head, arms, feet and torso – of a whole picture which may be brought together to make up one image or used separately to create something almost as ugly as Mrs Currie – but not quite.

Colours are contained within each file – so you don't need to recolour them once loaded into CAD – although light sources should be set to create perfect conditions. There's no way of viewing the disk contents without loading them into *CAD-3D*; but a set of blueprints for each file are provided.

CYBER SCENE

Recently Electric introduced Cyber Sculpt, *a sophisticated program to generate* CAD-3D *compatible images. Now a range of packages are drifting onto the market, all priced under £50, giving users the chance to graze in the tasty field of computer-aided design. MARK HIGHAM investigates.*

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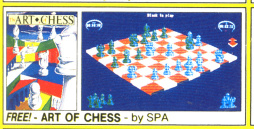

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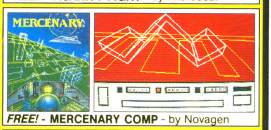

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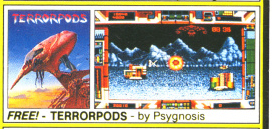

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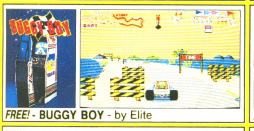

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DELUXE PAINT III

The long awaited paint package has finally arrived. No longer is it just an art program, however, as you can animate with it too. GARY BARRETT goes in search of Halfbrite Hill with the help of an Amiga, a mouse and the latest drawing tool.

£79.99 ■ 1Mbyte Amigas ■ Electronic Arts, Langley Business Centre, 11-49 Station Road, Langley, Nr Slough, Berkshire SL3 8YN (0753 49442)

Back in 1985 Electronic Arts released the art package *Deluxe Paint* to critical acclaim. A year later *Deluxe Paint II* appeared. It did everything that *Deluxe Paint* could offer and more. Version three is ready now and it's moved out of the realm of traditional art packages and entered into the world of animation. This puts it in competition with other animation software like Gold disk's *Moviesetter* and Antic's *Zoetrope*.

■ **Superb results are possible when using the perspective fill routine.**

There are three ways that animation can be accomplished: painting each frame in turn, painting the brush through three dimensional space and moving it, and Animpainting.

Painting frame by frame is the tedious method which involves drawing each screen in its entirity and then

WHAT'S HALFBRITE?

Extra Halfbrite mode is a fiddle on the Amiga that allows it to have 64 colours in low resolution rather than the usual 32. It only works in non HAM (hold and modify) mode. What you have is two sets of 32 colours, the second set of colours being half the brightness of the first.

cycling through the frames. Using the second method you can drop the brush on screen and then step to the next one. Animpainting is the last method and the easiest to use. All you do is start the animation off and then put the brush down as the screens flip. Once you've finished all the frames, you can sit back and watch it go.

I'll have a half

Extra halfbrite display mode is supported, with associated fill and paint modes, to help add some extra colour to your works of art. Shading is much easier to apply in extra halfbrite and as a result 3D objects looks startlingly convincing.

No longer are you restricted to a standard size screen; you can use all of it thanks to overscan mode. You don't have to put up with borders around your pictures, unless you really want to. In previous versions of *Deluxe Paint*, the only way to flip the screen either horizontally or vertically was to change the screen into a brush and then flip the brush. There's no need for this palaver in *DP III* as a screen flip facility has been provided.

The perspective mode has been expanded to include an extra dimension... the third. Brushes can be warped, bent and twisted to your heart's content.

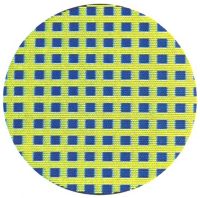
■ **The image that'll spawn a hundred others. The first step in creating an Animpaint script.**

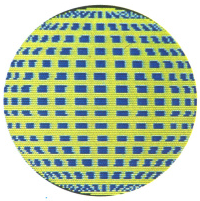
Screen perspective can also be used to adjust the shape and size of the brush according to its position on screen. When in perspective mode, the brush changes size as it moves in and out of the screen..

Wash and brush

New things can be done with brushes. First, you can switch on auto transparency which makes drawing easier. The background colour is considered transparent and the brush is the shape of the graphic rather than being rectangular. No more re-drawing when you drop a brush on an area of screen.

The brushes can be outlined with a single row of pixels if you want to separate them from the background. The handle on the brush can be moved





■ **Filling a circle with wrap off (top) ... and doing it with wrap on. Wrapping is another useful addition to *Deluxe Paint III*; it enables you to fill a shape with a brush in such a way that the final image looks solid. The actual shape and size of the brush are modified according to where they are in the object.**

to any corner of the brush, the centre or offset it from the brush in any direction. Being able to move the handle helps in positioning brushes when you're working at the edges of the screen.

Perspective fills are also possible. This makes objects seem solid due to the reduction in size of brushes as the object gets further away from the plane of the screen.

■ **The image a few frames later.**

Airbrushing techniques can be messy, but they do look effective when applied correctly. The problem is that you can often airbrush over something unintentionally and ruin a picture. *DP III* has a stencil mode which can be used to protect some of the colours. What this does is only allow you to draw over non-locked colours. Locked colours aren't picked up when you select a brush on screen, but the stencil can be switched on and off easily.

You pays ya money

Although *DP III*'s animation facilities are not as extensive as a pure animation package, the results can look much better because of the very powerful drawing facilities. 3D objects in particular are much easier to draw thanks to brush wrapping.

If you already own *Deluxe Paint II* and don't want the animation facilities

■ **A touch of extra halfbrite definitely brightens up the World.**

then the upgrade price might seem high, but otherwise it's an excellent art package that looks set to sell well. Activision will have to come up with something pretty spectacular if they want *Photon Paint II* to beat this.

● **Turn over to read about DP's author.**

UPGRADES

If you already have *DP* or *DP II* and want to upgrade to *DP III*, then all you have to do is detach the front cover of the *DP* or *DP II* package and send it to Electronic Arts. The catch is that you have to send some money too; £50 with *DP* or £30 with *DP II* and another £5 to cover carriage. Send your money and manual cover to: Customer Services, Electronic Arts, Langley Business Centre, 11-49 Station Road, Langley, Nr Slough, Berkshire SL3 8YN

for

- **Excellent brush wrapping facilities**
- **Easy to do impressive animations**
- **Full overscan screen to paint on**

against

- **Needs 1Mbyte minimum**
- **HAM still not supported**

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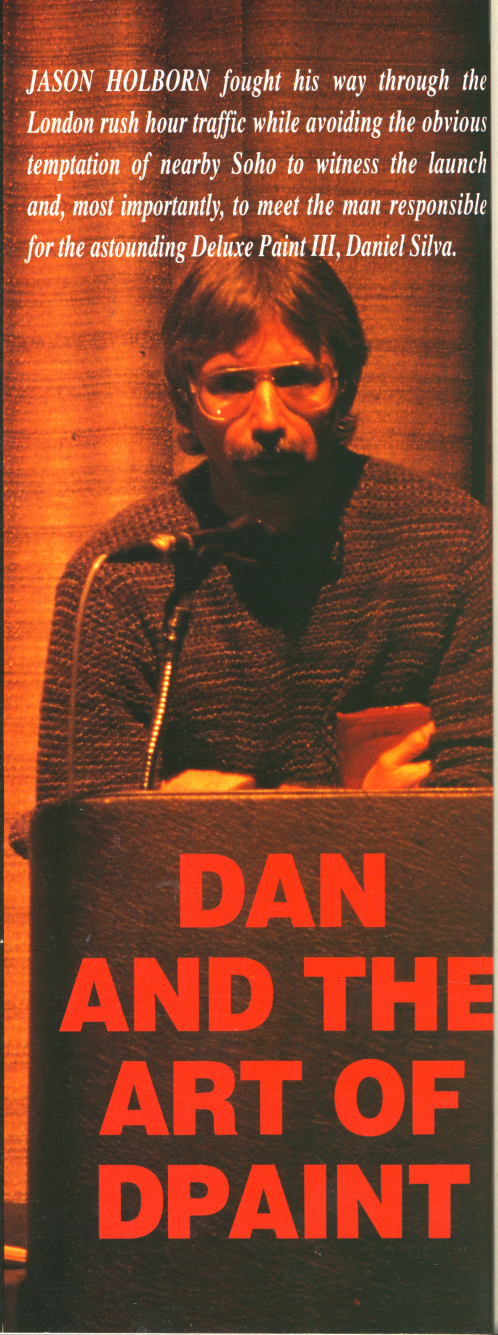
JASON HOLBORN fought his way through the London rush hour traffic while avoiding the obvious temptation of nearby Soho to witness the launch and, most importantly, to meet the man responsible for the astounding Deluxe Paint III, Daniel Silva.



DAN AND THE ART OF DPAINT

Dan Silva was born in 1942 in Van Nuys, Southern California. He later moved to Albaqueque, New Mexico, where he was educated at the local high school. After graduating from high school, Dan went on to study mechanical engineering at Stanford University in California where he gained both a Bachelors and Masters degree in mechanical engineering.

Dan's interest in computers dated back to the time he spent at Stanford. He used a computer to synthesise kinetic linkages such as robot arms. Like most programmers at that time, he used the computer only as a mathematical tool to take the drudgery out of calculations.

He began to realise the computer's potential for creative applications during his four years at a company called Informatics. During his spare time, Dan wrote an interactive language for displaying mathematical equations in a graphic form.

It was in 1978, when Dan started to work for Xerox, that he learned one of the most important lessons for him personally as a programmer – that of user interface design. Dan feels that many potentially powerful programs are let down by serious design flaws in their user interface and that many programmers would benefit from taking some form of training in user interface design.

By the time Dan joined Electronic Arts in 1983, he had a clear idea of how his ideal paint package should behave. With this in mind, he started working on *Prism* (an in-house software development tool for graphic artists at EA). *Prism* originally ran on an IBM workstation, and it wasn't until the release of the Amiga in 1985 that EA realised the potential of *Prism* as a commercial product. *Prism* was eventually launched in November of 1985 as *Deluxe Paint*.

Dan's first impressions of the Amiga was that for the first time a machine was available that really was a multi-media computer; one little box could produce both music, graphics and animation that – although not hi-fi and hi-res – was most importantly real-time.

Surprisingly, Dan has no formal training in either animation or artistic techniques. More surprising is that he feels that any training wouldn't have helped him as the more traditional artistic techniques just do not work on a pixel based computer screen. When an artist moves from canvas to computer, they have to completely adapt themselves to the new way of working. In respect to animation, Dan feels that his strong background in the mathematical side of mechanical engineering helped with the complex computations and algorithms involved in 3D animation.

Dan's other interest is in computer based music systems. He uses a Macintosh II computer to control a bank of MIDI keyboards. The more you speak to Dan, the more you realise that synchronizing both music and video is where he wants to direct his talents. He's fascinated by the almost limitless possibilities offered by desktop video; his next program could well be along these lines. Only time will tell what his next project will be written for, but the Amiga's strength in the American desktop video market makes it a strong contender. Dan hopes to treat himself to an Amiga A2500 and video recorder to explore DTV.

Like nearly all EA's products, *DP* was not actually written on an Amiga, but an IBM based software development system. The main bulk of the program was written in C with various sections written in assembler to provide the extra turbo charging. The code is both compiled and linked on the IBM and is then ported across to the Amiga where it can be run.

What about *Deluxe Paint IV*? Although Dan felt sure that there would be another version, he would not necessarily be the one to program it. Dan admitted that he had grown bored of the *Deluxe Paint* series and would like to tackle an entirely new project.

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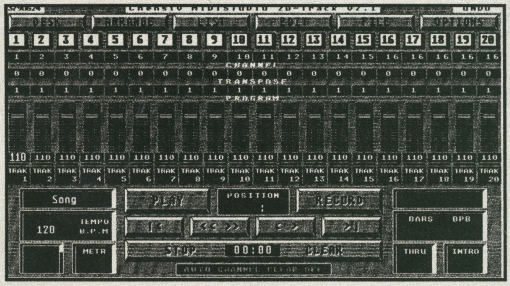

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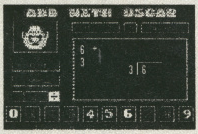

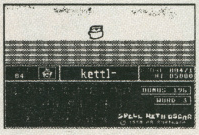

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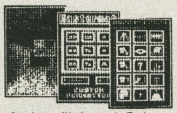

Picstrip is a utility that captures all or part of a picture file for use in Basic programs, supports GFA, FAST, HISOFT and ST Basics and is Degas, Neochrome and AB Animator compatible.

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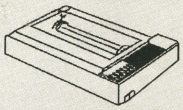

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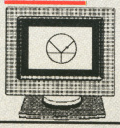

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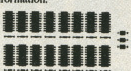

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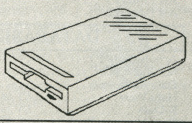

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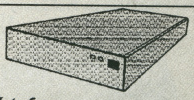

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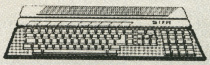

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WHO SHRUNK MICKEY'S EARS?

Part two of MARK PICKAVANCE's series on animation. Designing and animating living things this month. Also inside info on Grandslam's recently released Running Man. ST and Amiga owners, this is the place to let your imagination run riot.

You've seen animated cartoons in which a character – let's say Bugs Bunny – runs around and interacts with other animated objects. How would you go about doing this? It's not that difficult as long as you plan things out in some detail. And no, you can't have any more bouncing balls. Do you recall the story board tips last month? If you do, then you'll have an idea as to the course of action involved in creating character animations.

Before you embark on your Acid remix of Bambi, here is how to overcome some of the more frequently encountered animation obstacles.

Walk cycles

Mastering an effective walk is a great bonus. Although difficult to begin with, once achieved it is a technique which you will never forget. The best way to deal with a walk is to break it down into its component elements. Walking has two 'keys' which are usually set as frames one and nine.

Last month dealt with things travelling in arcs and not in straight lines. The walk is no exception. The head and body move through a flattened wave form; in the passing positions the body is raised up. Stand in front of the mirror and look at what happens when you walk. Your entire body moves up and down. Most animated characters in computer games must have telescopic legs; their bodies follow straight paths. Another point to watch for is the fact that the head and upper body are always forward of the center of balance. This creates a continuous state of imbalance which is converted at the start of a walk into forward motion by your legs. If it wasn't, you would fall over.

The legs are a major part of the walk – and are usually drawn first – but the upper body must also move properly if the animation is to look correct. The arm positions are critical; they must swing in the opposite direction to the legs as they act as a counterbalance. For instance, left leg forward, right arm forward. The arms do not rotate independently either: they are pivoted around the shoulders. When walking, almost every part of the body moves in some direction or other. Even the head bobs in sympathy with the wave motion of the walk. A distinguished animator – mentioned in one of the inserts – once said that he sketched the head and body first and then treated the legs and arms as imaginary ribbons. You can interpret this as meaning things that move in arcs should be drawn in curved line.

Now, time for you to try your hand. Like last month you need to use some graphics and animation software. *Cyberpaint* (ST) is now available as *Zoetrope* for the Amiga and *Dpaint III* has animation added to its comprehensive features. These are more than suitable for your needs.

Thorn grasping

On with the animation. Figure 1 shows a standard walk with a stick-man version beneath the detailed one. Copy each frame to your animation package. Overlap the position on the screen so that when animated it walks on the spot. Then copy it again – this time edit the design to produce the other half of the walk. It's much easier to do simple line drawings, rather than detailed jobs, and test the animation. If you are quite happy with the animation then render (paint) your character. The detailed version is still basic; the character has no features or clothes. This reflects the majority of conventional animation in which the characters are animated as a whole and the features added later. You can fully render your animation, but you may spend a long time on a short sequence and find that you have succeeded in disguising a good flowing motion with a poor graphic style.

Try changing the animation to reflect a certain type of character. The walk shown is very general and a little mechanical; what is needed is personality. This is where your powers of observation start to come into play. When you go shopping next, pay attention to the walking action of people of different

RHUBARB AND GODFREY

One of the great exponents of character animation is Bob Godfrey, an Australian born cockney (work that one out), who is one of the mainstays of the British animation scene. His most famous creations include *Rhubarb & Custard*, *Instant Sex*, *Bio Woman*, *Dream Doll* and more recently *Henry's Cat*.

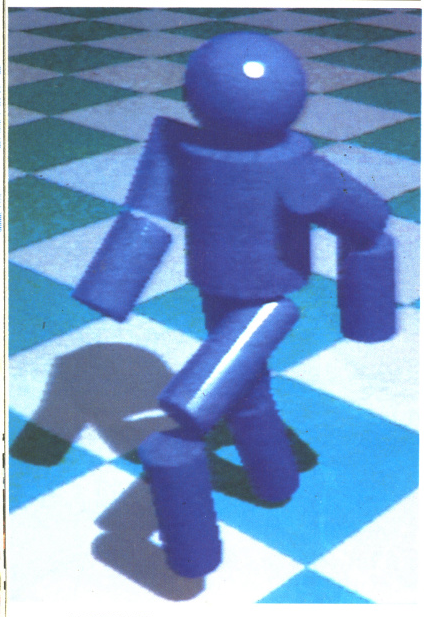
© THE WALT DISNEY COMPANY

HEY BIG EARS

The most famous cartoon character of all time is Mickey Mouse who first appeared in the mid '30s. He was originally designed as a rabbit, but the ears got bigger and he turned out to be a Mouse. Mickey's ears are unusual in that they are never any other shape than round. Disney animators realised this inconsistency and three films were created in the late '40s with 'perspective ears'. The result was not pleasing and the animators returned to drawing him incorrectly. Until *Mickey's Christmas Carol*, which was produced for the 60th anniversary of the Disney Corporation, Mickey had not been animated before Walt Disney's death in 1966.

If you ask an animator which Disney feature he considers to be the most skillfully animated, the odds are that the answer will be Dumbo. In contrast to the film, the events surrounding the Dumbo production are not as heart warming.

In 1940 the Disney corporation ex-panded into a large, well organised film production company. In the process relationships between the animators and Walt became strained. The result was a strike in which Walt was locked out of the studio by his own staff. Only the state department asking Walt to go to Mexico for a year as American Ambassador saved the situation. In that year the animators were left to their own devices and produced Dumbo. It also had the additional effect of introducing a large number of films with Mexican subject matter when Walt returned.



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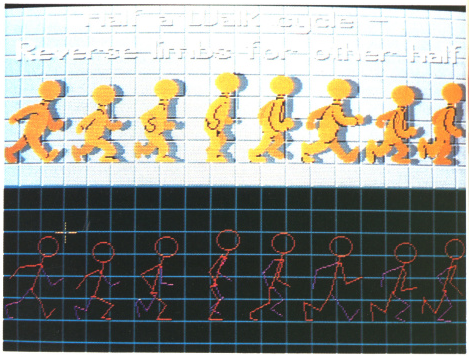

■ **Figure 1 – first steps in animation. Frames one to eight are drawn. Frame nine is a mirror version of one (arms and legs in the same position, but viewed from the other side of the body). This animation is designed to cycle over 16 frames; faster or slower walks would obviously modify this. The series of images representing the character positions in a walk have been designed to appear cartoon-like. No attempt has been made at realism here – this is Toontown! Frame four is what is known as the 'passing position'. This is when one leg is straight and the other retracted.**

weight, age and sex. They all move in radically different ways. Look at the direction their feet point (inwards or outwards), the knee positions and how much they use their arms. Children generally use their arms a great deal and more expressively than adults.

The best example of a radical walk isn't even human; next time David Attenborough is being 'very quiet, as not to disturb these timid creatures' take a detailed look at apes. Their skeleton varies from that of Homo Sapiens in that they don't have a flexible knee joint. This means they cannot walk upright in the conventional sense, and must sway from side to side to make forward motion in a upright position. You could spend many years experimenting just with walks alone, the possibilities are endless.

The Running Man

The natural progression from a walk is into a run. The graphics in Figure 2 demonstrate this. The examples shown were created for inclusion as sprites in the *Running Man* game. Because of the game's memory limitations, the entire run is over eight frames. You may want to insert the 'tween' images to spread the run over 16 frames. By observing the sprites, and the skeleton version underneath, you can see that running amplifies the wave motion seen in the walk. In fact, everything that applies to walking can be equally directed to running – just more so.

■ **Figure 2 – animation sprites from the *Running Man*. The artist responsible was Jerr O'Carroll who works for Emerald software in Eire. He created the graphics for the Grandslam Entertainments game of the film. It's a good example of a run drawn by a person with animation experience.**

Arm motion is modified so that the arms still rotate about the body while being kept in a bent position. During a walk the body sits forward because of imbalance. This is even more pronounced in the run to direct the driving force of the legs. One last pointer about running: it is valid for the entire figure to leave the ground between strides. If these airborne sequences are extended to the majority of the frames, the character will became more bouncy and dynamic. Unfortunately realism takes a dive. Try experiment with this motion over a series of surface textures – mud, ice, rubber and so on. ■

◄ The six million pixel man. In addition to the rules of animation iterated last month, character animation has a set of guide lines which are specific to this particular type of animation. Here are some basic pointers to help your character animation. Do not try to be realistic – character animation is about exaggeration and extremes. Make your character simple to produce – animation is difficult enough without making the drawing hard as well. Try to observe yourself or another person performing the action you want to animate. Look at animated films on TV (in slow motion if you've a video). Leave facial expression until you really know what you're doing. Construct your character from curved lines if possible. Create a storyboard: a series of quick sketches detailing the action. Start animating in small, manageable sections that you can assemble later. Don't be put off by the scale of your endeavour.

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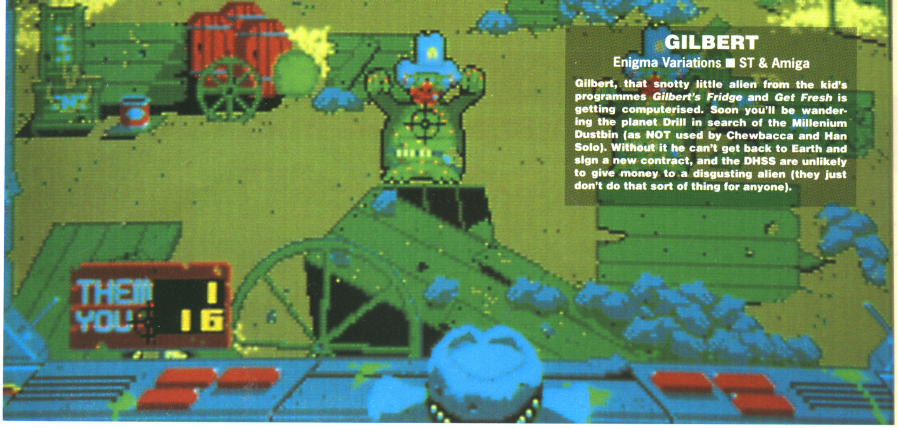


GILBERT

Enigma Variations ■ ST & Amiga

Gilbert, that snotty little alien from the kid's programmes *Gilbert's Fridge* and *Get Fresh* is getting computerised. Soon you'll be wandering the planet Drill in search of the Millenium Dustbin (as NOT used by Chewbacca and Han Solo). Without it he can't get back to Earth and sign a new contract, and the DHSS are unlikely to give money to a disgusting alien (they just don't do that sort of thing for anyone).

SCREEN PLAY

PREVIEWS

BIO CHALLENGE

Palace ■ ST & Amiga
£19.95 ■ April

The French record company Delphine Records has recently moved into computer software under the name of Delphine Software. Outside France Palace are handling the marketing of Delphine games and Bio Challenge is their first release.

It's a multi-level scrolling shoot-em-up with over 160 colours on screen at one time on the ST and even more on the poor Amiga. Included in the game are nine different pieces of music by one of Delphine Records musicians, Jean Baudlot. Perhaps other software houses should consider linking with record companies, if they did then perhaps there'd be less games with tacky tunes playing.

MOONWALKER

Plastic man, Michael Jackson, is making his way from cinema onto computer screen, in *Moonwalker*. It's based on the successful movie of the same name in which Michael starred.

The story goes that a shooting star passed by and mutated Mick so that he had weird powers of transformation. During the film Micky –babes turns into variety of things: including a car, a silver robot and a spaceship (sounds like a tacky scenario for a computer game) and uses them to defeat that naughty person called Mr Big (gets around doesn't he this Mr Big). *Moonwalker* is due for release in the autumn.

BOMBER

Activision ■ ST & Amiga
£19.95 ■ April

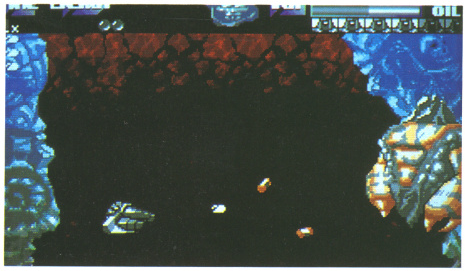
Vector Graphix is a company that specialises in 3D graphical games, the first of which was *Star Wars* appearing under the Domark label in 1987. Their next game has the working title of *Bomber* and is a combat flight simulator. 14 different aircraft may be chosen, each with its own handling characteristics and behaves as the plane itself would. Unlike most flight sims you're not restricted to US planes, there's also European and Soviet planes as well. For a change you can blast away at F-15 Eagle from the cockpit of an Mig 27 Flogger and see Americans taste salt water.

THUNDERBIRDS

Grandslam ■ ST & Amiga
£19.95 ■ Mid April

Five, four, three, two, one – Thunderbirds are go!. Those famous puppets from the sixties are currently making a comeback and this time they're venturing onto the magic of the computer screen. This is Grandslam's first release starring the wooden wonders, whose acting abilities have been known to rival those of the Coronation Street cast – often; other games seem destined to appear over the year following the same vein.

The only thing missing from the game is strings, it's just not the same when you can't see them.



▲ ***Bio Challenge*, 160 colours at one time.**

PACLAND

Grandslam ■ ST & Amiga
£19.95 ■ Available now

A while ago Grandslam released *Pacmania*, featuring the ever hungry Pacman and his ghostly foes. Well the little ball is back again on a mission from God – well, a mission for a fairy actually, but God sounded better. *Pacman* leaps and runs around his home world avoiding arch enemies and trying to find the fairy and help her home to fairyland.

DARK SIDE

Incentive ■ ST & Amiga
£24.95 ■ April

Remember *Driller* from Incentive? Filled 3D graphics and a planet full of problems to solve with both mind and weapons. The sequel *Dark Side* is in the finishing stages now and continues the story. Although it still uses the same Freescape system, there have been many changes made to it. Lots more animation has been added and the speed has been increased. Following hot on its footsteps will be *Total Eclipse*, another game using the same techniques, but with an Egyptian flavour.

SHOCKS BOX

The games that hit the cutting room floor this month include smut, sport and mindless violence. Beginning with the most interesting subject (for perverts anyway) of smut there's yet another strip poker game, *Hollywood Poker Pro* for the Amiga. Not only do you get four digitised girls to strip (including one who's hideously ugly), but there's a new incredibly tacky feature... zoom. Yes, you can zoom in on your favourite bits for a close-up.

On the sporting front there's *Roy of the Rovers* by Gremlin with the comic book hero trying to save his club and there's also *Kick Off* from Anco who are better known for their strip-off games. *Kick Off* was only a demo, but once we get a finished game we'll tell you more.

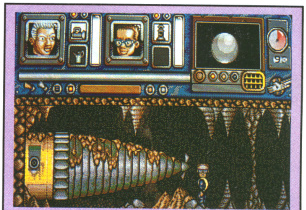
***Zany Golf* by Electronic Arts is reminiscent of those crazy golf courses that you find in every holiday resort in the country. Funny that there isn't one in Stoke.**

And now to violence! *Dragonscape* from Software Horizons put you in the saddle of a big green dragon doing battle with a multitude of monsters over a 64 directional scrolling landscape. While we're on the fantasy theme there's *Realm of Trolls* from Rainbow Arts in which you get to do some serious troll-bashing.

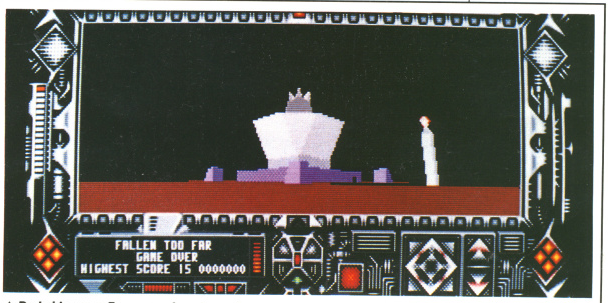
***Deoxyribonucleic Acid Warrior* (or DNA Warrior to non-chemists) is a scrolling shoot-em-up in *Menace* style, but without the polish to make an addictive game.**

Rounding this month's games that got away is *Journey to the Centre of the Earth*, based Jules Verne's classic novel. It looked great with lots of nice digitised pictures, but someone forgot to put some gameplay in there. Better luck next time, Rainbow Arts.

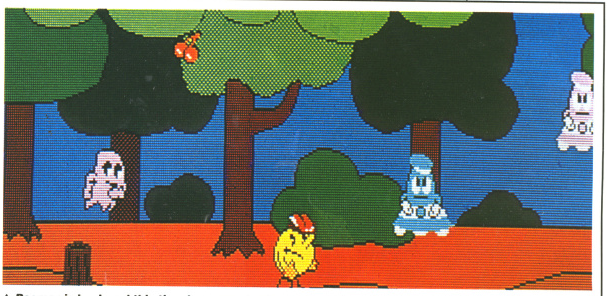
▲ **The Mig 27 Flogger, one of the 14 aircraft included in Activision's new *Bomber*. So exciting that even Pamella Bordes could have a whale of a time up there.**



▲ ***Thunderbirds* are go, and it looks like Brains could be in trouble with water rising fast and only rock above his head. Don't worry though, wood floats.**



▲ ***Darkside*, more Freescape from Incentive.**



▲ ***Pacman* is back and this time he means business.**

GAMES INDEX

Blood Money 72
Psygnosis

Archipelagos 76
Logotron

Running Man — Grandslam 78
Ballistix — Psygnosis 80
Fright Night — Microdeal 84
Road Blasters — US Gold 84
Jug — Microdeal 87
Vigilante — US Gold 88

Gamebusters 91

▲ Shoot off those globules on the level three guardian and watch him bleed. Not that I'm in favour of gore of course, neither is David Jones and he wouldn't dream of adding a cheat mode to any future games to make them more gorey, now would he?

▲ Looking for trouble? Eye'm sure you're going to find it! Now may be an eyedeal time to stock up on equipment from the monster bashing equipment store.

▲ Sea serpents can't be killed, so make sure you give them a wide berth. Apparently some of them are short sighted though and wear glasses. Nah... it's an explosion really.

BLOOD M

PSYGNOSIS

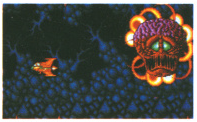
Amiga – Joystick. Reviewed £19.95.

ST

Whisk one bored kid away on holiday before suffering his final exams in Venusian Accountancy, toss in an exciting safari where you either become very rich or die and what do you get? Another game from DMA Design, they of *Menace* fame.

You won't be surprised to discover that *Blood Money* is a shoot-em-up with hordes of aliens drooling for lead and plenty of bolt-on weapons to assist the blasting.

▲ Level four, and a hideous head tries to make mincemeat out of you...



▲ But he's not so happy now.

AIM

Greed is the driving force behind this game, but then it's always been high on the cast list in a game where the rewards of success are fortune and incompetence brings only death. There are four planets to conquer, each one boasting an entry fee from $100 to $400. Choosing the second planet at a cost of $200 (your initial starting salary) is possible, but you won't be left with any cash to purchase vital extra weaponry.

Cash is obtained by shooting hostile planetary inhabitants and collecting the coins they drop. Miss the coins and you lose out on the money. Some aliens are worth more than others but take more shots to destroy.

STRATEGY

You'll encounter five basic types of monsters: blastables, money munchers, stationary and landscape monsters and massive invulnerable creatures. The blastables are in greatest abundance and come in a multitude of shapes and sizes. Money munchers won't kill you but steal your money instead so should be quickly blast-

GRAPHICS AND SOUND

The loading screen is a wonderful piece of artwork followed by a sequence featuring excellent digitised speech and music as you watch a ship navigate its way through an asteroid belt and then approach a planet.

The game gives you have a choice of sound effects or music – the former is the better deal. Music is ok, but the Amiga is capable of a wider repertoire. Sound effects are better, but not as good as those in *Menace*. If you want to know why then read all about it in the programmers' profile.

Graphically it's in a class of its own with loads of sprites, all of which are beautifully animated. The green amoeba creatures on the watery planet of Grone are particularly well done. Scrolling in *Blood Money* takes place across an impressive four directions proving that DMA certainly know what they're doing when it comes to quality graphics and addictive gameplay.

DMONEY

ST – Joystick. Available May, £19.95.

ed. Stationary aliens are at a fixed point on the screen, but usually spin around and cause instant death should you touch them.

Other monsters include the landscape guys who lurk in the scenery and are infinitely tricky to spot. Then there are the invulnerable creatures who come out of the edges of the screen and have to be avoided if you're not a death addict.

A host of hazards reign too: gates that open and close, other gates which must be opened with the assistance of laser power and blocks that must be shot out of your way.

Periodically you'll encounter supply lockers where extras can be purchased to improve your fire power. Here, the display changes to a selection screen where you can buy any of eight different weapons. Earth and skybound missiles increase your firing shots and cover a wider area which dramatically increases your destructive powers. Bombs kill off the enemy quickly, but send gates spinning around like a catherine wheel, making it impossible for you to pass.

Rear firing missiles help protect your back and long range missiles let you knock enemies out of the sky from a safer distance. Speed-up gives you the necessary speed to get you out of

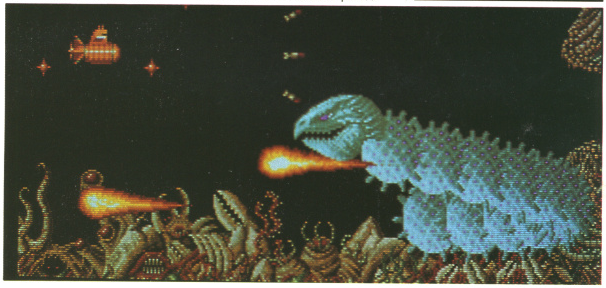
▲ Go for a fly in your jet pack on the icy world of Shreek.

tight spots, but you do lose out in situations where precise maneuverability is required. A force-field purchase gives you short-lived invulnerability.

One more thing that needs mentioning is the end of level guardian, a tradition carried over from *Menace*. There's one to deal with as the final enemy on each planet. Many hits are needed to eradicate them and they're armed with enough fire power to tear you apart. Get past the guardian and you get a healthy cash bonus and return to select another planet.

FORMAT GOLD

STILLS	0 1 2 3 4 5
ANIMATION	0 1 2 3 4 5
SOUNDTRACK	0 1 2 3 4 5
LASTING INTEREST	0 1 2 3 4 5
OVERALL 92%	

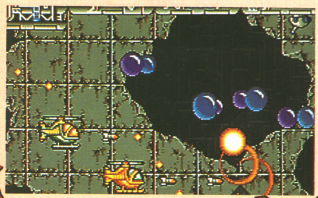


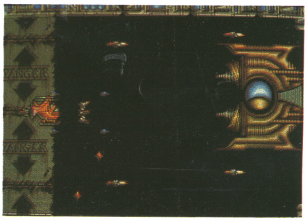
▲ Hissing Sid lives...at the end of level two, or maybe it's just one of his brothers (or sisters).

CONCLUSION

It may not be an original concept and boiled to basics it's just another shoot-em-up, but that doesn't stop it from being a hugely addictive game that'll keep you blasting for months. The two player option offers simultaneous play which keeps two people happy at once. This game is so visually brilliant and possesses those classic addictive qualities that once you've picked up your joystick you just won't want to put it back down again! This is arguably the best shoot-em-up on the Amiga to date.

Gary Barrett





◀ End of level one, shoot that alien in the middle and make it snappy. Once you've dealt with it you'll have plundered the planet and then choose your next destination in the shoot-em-up safari.

SMITH 'N' JONES

David Jones (programmer) and Tony Smith (graphics designer) from DMA Design, who have spent the last eight months writing Blood Money.

The one thing that's holding David back on the Amiga is lack of memory. Games have to be written for the bottom of the line machine and there's just not enough memory on the basic Amiga.

Don't tell anyone else, but DMA's next game promises to be a hack and slay which might have an unusual cheat option, one that adds more blood and guts to the graphics for those not of a sensitive disposition.

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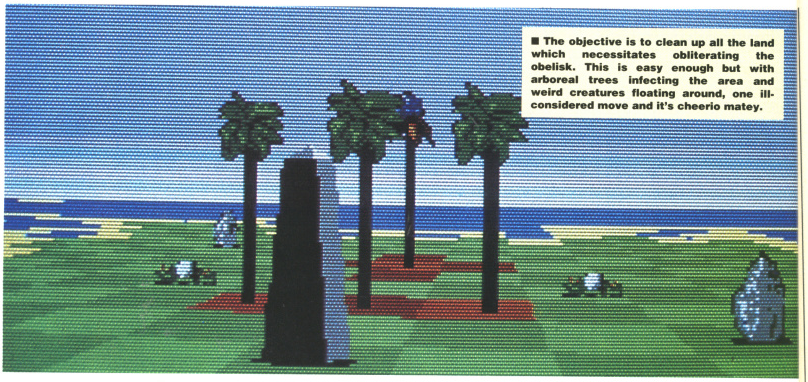


■ The objective is to clean up all the land which necessitates obliterating the obelisk. This is easy enough but with arboreal trees infecting the area and weird creatures floating around, one ill-considered move and it's cheerio matey.

ARCHIPELAGOS

FORMAT GOLD

LOGOTRON

ST – Mouse and keyboard. £24.95. Reviewed. **Amiga – £24.95. Imminent.**

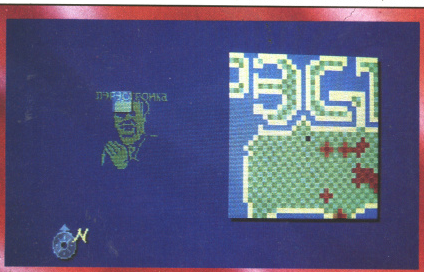
Land creation is one of those issues which would solve the problems of the world if only it could be implemented. If you could design a new planet and fill it with islands, you could teleport all the third world countries and Iran up there and forget about them – no more Comic Relief or Children in Need has to be a good idea.

AIM

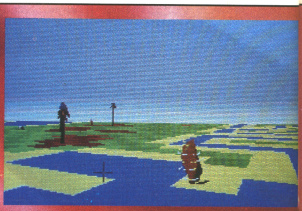
Well, the Ancients, a group of bearded old men, have achieved just that by creating thousands of Archipelogos – smaller islands. Unfortunately a band of visitors came down and populated the place, killing the Ancients and taking over all the Archipelogos. The visitors eventually left, but behind them was the kind of perverted wildlife that grows around Sellafield. Gladioli have been turned into eggs awaiting a spark of thunder to spread their poison, hungry necromancers are trying to eat up the land and, worst of all, the tea supplies have all gone.

Archipelogos sees you as a spectral floater with the ability to leap across islands without touching the ground. The island is being gradually infected by arboreal trees spreading poison all over the place as if they're an animal rights' libber armed with a syringe of mercury. As areas of the island become infected they turn red and you can no longer step onto them, so the chance to make godly leaps from one side to the other is a major advantage. This effortless

STRATEGY

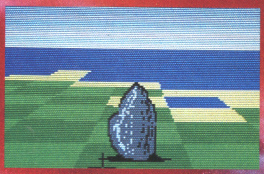


◀ The map gives an idea of what is easily accessed and provides an invaluable view of the island. It's often useful making a note of your location when you come across the obelisk because things get tough when it's a race against time.

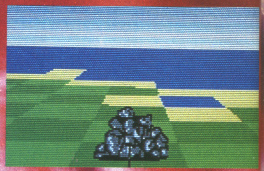


▲ Another lethal adversary is the whirlwind which roams some of the Archipelagos and destroys you the instant it gets close.

▲ Finding the stones isn't the easiest of tasks, especially since they don't appear on the main map...



▲ But when they do materialise it's easy enough to destroy them. Just aim the cursor at their base and fire...



▲ There, totally obliterated, now it's onto the next one. The problems really occur when the stones's aren't on an island.

task is achieved by selecting an area of the map and going there. You can't move onto infected land, or quick-sand since both cause you to die.

Your task is to destroy the obelisks which stand as the visitors' claim to the island. These can only be wiped out after you've first turned all the giant stones into rubble – easy enough while they're connected to the mainland. Problems arise on later levels where the stones stand on smaller islands. Here you accumulate energy to bridge islands to the mainland; only then can you blast the stones. When the last stone has been destroyed you have ninety seconds to find the obelisk and sink it.

Just sinking the obelisks would be easy enough if it weren't for the fact that a whole legion of creatures are patrolling the landscape at the same time. Everything from whirlwinds to wizards wander the terrain and they all have some little trick to show you.

The game is arranged so that each level you complete is stored on disk – the next game resumes from your last point. Every fifth island has been specially bit-mapped to look like anything from the *EastEnder*'s logo to an unflattering portrait of Gorbachev. However, the screens in between these are designed more randomly. With almost 10,000 progressively difficult levels, it's not a game you'll complete easily.

STILLS 0 1 2 3 4 5

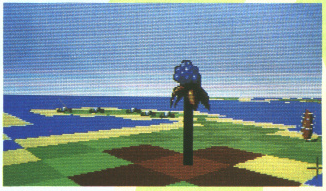
ANIMATION 0 1 2 3 4 5

SOUNDTRACK 0 1 2 3 4 5

LASTING INTEREST 0 1 2 3 4 5

OVERALL 84%

GRAPHICS AND SOUND



Archie utilises a fairly small area of the screen and features filled wire-framed solids which make up the landscape. The actual grassland is constructed as a chequerboard type of arena with infected areas filling entire squares.

The graphics certainly won't blow your mind. The different obstacles are animated – with such things as flower pods opening and closing – but there's always the feeling that more could have been effectively achieved considering that the ST is graphically a very capable machine.

Despite animated sequences, nothing is particularly smooth. The land masses come towards you in fairly jerky steps. This does little to evoke a gasp of astonishment. However, the 3D images are effective. Views from all angles are a visual treat.

PROGRAMMERS

The programming team consists of Paul Carruthers and Ian Downend. Paul, 27, has been responsible for the graphics and programming of both the ST and Amiga versions. In all, the game took approximately seven months of programming time and includes a specially designed programming algorithm to create the multitude of different landscapes. *Degas Elite* was used for the graphics.

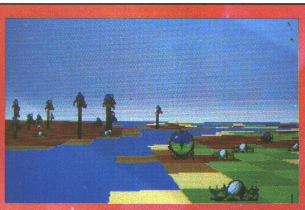
The Amiga version is a direct port from the ST so looks unlikely to utilise any of the clever hardware.

CONCLUSION

Archipelagos does not strive to be a stunning visual experience. Where the thrill really lies is in its gameplay. It's a strategy very much in the same vein as Firebird's *Sentinel*. When the clock starts and you face a ninety second countdown in search of the obelisk, the game really gets exciting. Almost ten thousand different levels have been wildly designed to ensure that even the seasoned gamer will come back for more. The bit-mapped screens add that additional spark of interest.

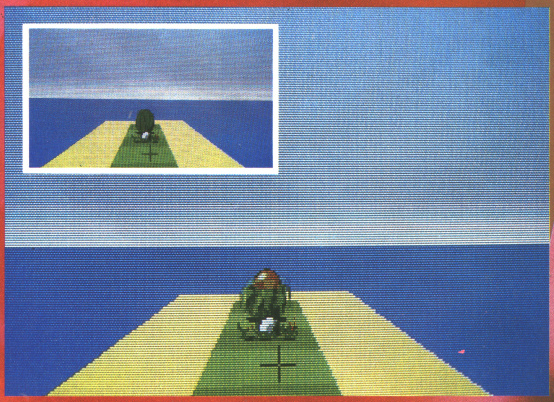
You learn your own ways of tackling problems, remembering where the obelisk exists and learning which areas of the map have been linked to the main land mass. It's this kind of gameplay which makes *Archipelagos* a very original concept and worthy of a Format Gold.

Mark Higham



▲ Eye, eye. Who's this then? The islands are filled with odd characters such as the necromancer who patrols the shores, gobbling up sandy areas as if he hasn't had a decent meal in ages...

▲ He runs around changing ordinary land into quick-sand which means instant death if you're on the square at the time.



▲ Blood eggs, another member of Archie's weird wildlife gang, wait for the sky to go dark at which point they're struck by lightening. They'll then either infect the island at phenomenal speeds or start eating the land which isn't good news if you're in the vicinity. (inset) The eggs start life fairly innocently but when the sky changes colour you know you're in for a storm and that's always bad news.

RUNNING MAN

GRANDSLAM

Amiga – Joystick. £19.95. | **ST – Imminent. £19.95.**

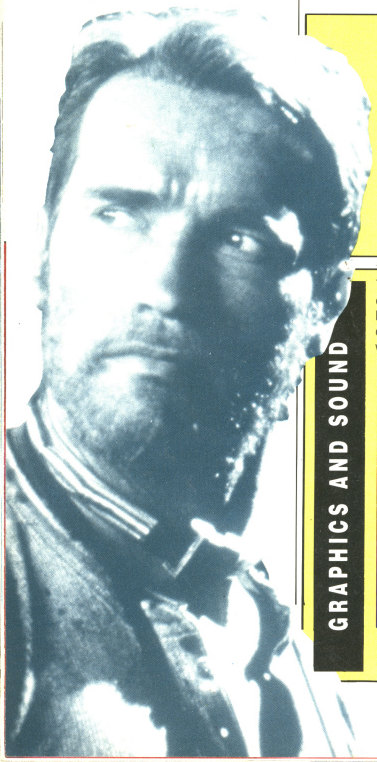
Television is one of those laundered industries where only the pure can venture onto the silver screen. One whiff of scandal, a breath of drugs or porn rackets and wham, you've had it.Just look at Frank Bough. *Running Man* changes all of that by offering criminals an opportunity at superstardom; albeit the pathway can lead towards their maker.

Based religiously around the film, the game sees hardened criminals brought onto TV to engage in a battle to the death against the Stalkers all for the viewers' benefit in this modern-day version of *Spartacus*. Ben Richards is a policemen unjustly convicted of murder who now has to compete on the *Running Man* show where his death is all the viewers want.

The game is similar to watching Tommy Cooper's stage performance with Richards coming up against death and pausing every now and again for a commercial break. Enemies range from a gang of brain-dead Stalkers in level one to a remarkably resiliant opera singer with a fetish for electrocution. Even Buzzsaw, a freak passionately into leather, appears astride his motorbike just to invoke a moment of terror.

Between levels there's a challenging code element where you shuffle a set of icons around one side of the screen to make up the code on the other. If you succeed you can shut down the cameras tracing you. With only a minute to spare it's no easy task.

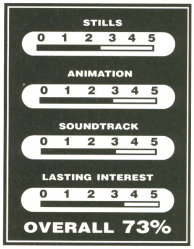
▲ **A level only ends when you've wiped out the main Stalker prominent on that level. These range from a Japanese hockey player with exploding puks to Buzzsaw – the biker freak.**



CONCLUSION

A variety of inhuman foot kicks makes *Running Man* a street-fighting game in a different league to the rest. It's astonishingly close to the film which makes a change from the majority of film orientated releases. Code cracking between levels adds an unusual strategy element to the game, however, graphics and speed could have been improved to give it a far more addictive feel. An opening sequence of brilliant sampled music and digitised pictures just isn't enough to sustain your interest when you get into the game. Additionally, since the game is only five levels long, the whole thing can get ridiculously hard ridiculously quickly.

Mark Higham



GRAPHICS AND SOUND

The five backdrops for each level are colourful enough, but they're severely lacking in detail when you consider the capabilities of an Amiga. Only a small width of the screen is utilised so it's not always easy to see who's attacking you or the method's used. The action doesn't move particularly quickly when scrolling is utilised, so Richards' movements won't exactly blow your mind – more like lull it to sleep.

▲ **Objects are retrieved up by bending down and pressing the fire button. Health comes in a neat box marked with a dubious red cross. Aside from this you can also find bricks on the ground – useful for zonking the living daylights out of your foes.**

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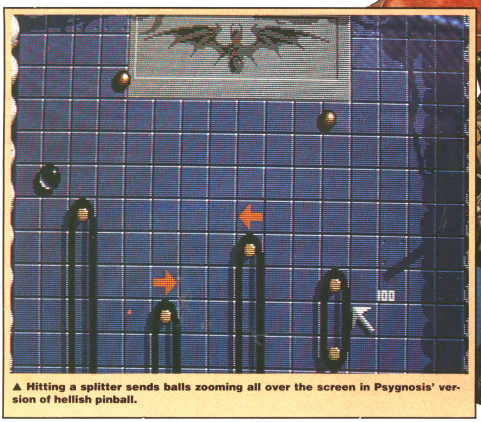


▲ Hitting a splitter sends balls zooming all over the screen in Psygnosis' version of hellish pinball.

BALLISTIX

PSYGNOSIS – PSYCLAPSE

ST – Joystick only. £19.95. Reviewed.

Amiga – Out now. £19.95.

Ever wondered what goes on down in the depths of hell on a Saturday afternoon? In Britain people watch football at their local ground but in hell they have *Ballistix*. At least that's the impression Psygnosis' latest offering seems to convey.

The action takes place on a large, vertically scrolling pitch with goals at either end. Players use the joystick to control an arrowed cursor with an objective to knock the ball into the opposing goal. The arrow itself can't move the ball but by pressing fire you can shoot smaller metal balls to redirect the main one.

There are two modes of operation: one and two player. The former sees the pitch tilted towards your goal so that instead of the usual computer-controlled player as an adversary the wild angle of the game board is what makes the challenge. With two players you battle it out against another human (or demon, depending on who your friends are) and the pitch. There are 50 levels in a one player game and 80 in two player mode.

Early levels offer little to make things too tricky but as you progress through the game more obstacles are tossed in. These include acid pools, bumpers, magnets –roughly the same effect as a night on the tiles – troughs and splitters to name a few. Other objects regularly appear on the pitch to either boost your score or provide you with an invaluable shield which does an effective job of protecting your goal.

CONCLUSION

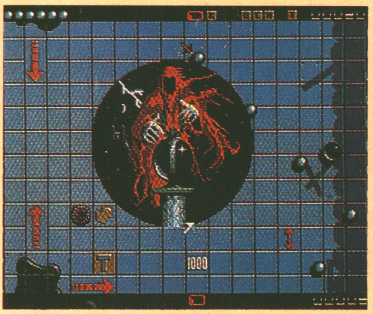
Ballistix is in some ways like the earlier Psygnosis games *Barbarian* and *Terrorpods*: it looks and sounds excellent, but loses out on gameplay. In the end the gameplay boils down to knocking a ball into a goal – not a major achievement for a 16-bit machine. Producing a game with astonishing sound effects and visuals initially makes it appear attractive but with little gameplay you'll soon lose interest.

Gary Barrett

GRAPHICS AND SOUND

Most of the graphics in *Ballistix* are static pictures or background scenery and they're all colourful and well-defined. The way that the title screen unrolls is a particularly impressive effect. As far as moving graphics go you have lots of smoothly animated balls flying around the screen and a couple of arrows.

In the sound department there's some good digitised speech although the spot effects used in the game are limited. As is almost always the case the graphics and sound are far better on the Amiga version.



▲ The different levels see things getting so difficult that you'll have trouble stopping your eyes from spinning.

STILLS 0 1 2 3 4 5

ANIMATION 0 1 2 3 4 5

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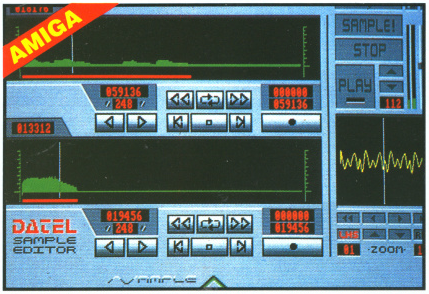

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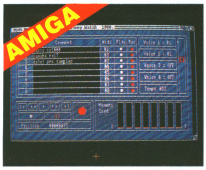

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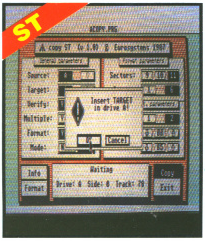

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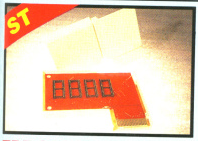

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ST – Mouse, joystick. £14.95. Reviewed.

Amiga – Available soon. £14.95.

US Gold's new Capcom licence claims to see you in the ultimate futuristic road race, but it's nowhere near as exciting as a death ride on a BR train. The game takes you across one country after another in a bid to blast your opponents with whatever weaponry you can get hold of.

Special fuel pods become available after firing at specific vehicles; you must direct your car towards them to pick them up and reap the rewards. All sorts of additional difficulties emerge in the shape of mines, spikes and gun-turrets. If you're unfortunate enough to become the victim of any of these, you automatically explode and lose one of five lives.

A plane occasionally flies over you dropping weapons which you must drive over to retrieve. These can be attached to the top of your car and do an effective job of wiping out the enemy.

CONCLUSION

Probe aren't best known from their racing games. *Outrun* might have made it into the number one slot, but no-one really took it seriously. But *Road Blasters* looks set to change all that, especially since it's coming under US Gold's new £14.95 umbrella. Graphics aren't spectacular – another Probe problem – but there's an addictive gameplay there and that's got to be a good omen for the forthcoming *Outrun Europa* release.

Mark Higham

STILLS 2.5

ANIMATION 3.0

SOUNDTRACK 2.0

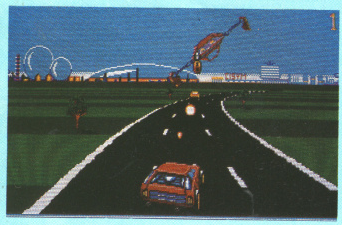
LASTING INTEREST 3.0

OVERALL 58%

GRAPHICS AND SOUND

The movement is jerky, but as a result the game is very fast with smooth corners and the occasional roadside sprite. At first glance, *Roadblasters* seems a competent game – however, it lacks the kind of graphical depth to sustain interest for long periods of time. There are no side views of cars and, despite one unimpressive spin routine, you'll never see your vehicle do any of the great leaps or rolls which exist in many racing games.

Sound is limited to simple spot effects and an awful tune which plays during the frustratingly long loading time.



FR

This long-awaited creation by Steve Bak sees you in the role of Jerry Dandridge from the hugely popular horror movie of the same name. You're one of the undead trying to stay that way – which makes a change from the usual game. Okay, so Mrs Thatcher's been undead for years but who said Jerry was unique?

AIM

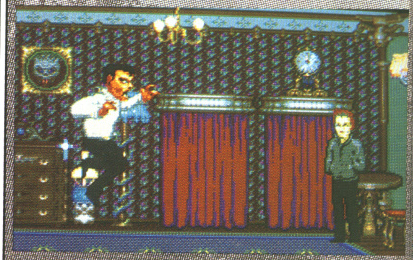
Your house has been infested with do-gooders who are trying to make your death a misery by tossing all sorts of objects at you to disturb your progress. The idea is that you have to run around your house, sinking your teeth into the jugular vein of any do-gooders you come across. These include everyone from a wrinkled old-man to a scantily-clad female and drawing their blood simply involves directing dear old Jerry up to them while avoiding the crucifixes that they throw at you.

GRAPHICS AND SOUND

If there's one area that *Fright Night* really excels in then it's the graphics and sound. The opening screen, traditionally more impressive than the actual game, boasts a stunning digitised picture taken from the Fright Night film but the magic of this screen is carried through to the rest of the game. Giant, smoothly animated sprites make up the action. Good old Jerry has a face like a deep-fat fried hamster but that all goes to make up the atmosphere. The other characters and a set of clutching hands which erupt through the floor boards have been well-defined and boast a range of great colours.

Aside from the crystal-clear sound of sampled speech during the opening of the game, there's a selection of other sampled music to accompany the entire playing time. These include such musical extravaganzas as the death march and an eerie rendition of There's no Place like Home as well as the occasional burping after a bout of blood-sucking.

▲ A good old tasty munch on somebody's jugular might seem reminiscent of a trip to McDonalds but it serves to improve your health. Another way of increasing your blood count is to return to the coffin but you need to hang around there for some time before your health reaches respectable proportions.



RIGHT NIGHT

MICRODEAL

ST – Out soon, £19.99.

Amiga – £19.95. Joystick. Reviewed.

▲ The weird female with the big boobies eats away at your health with astonishing speed. In almost no time at all you can be reduced to a pitiful wreck.

▲ The backdrops of the different rooms differ for each level so that you never get to explore the same level twice.

STRATEGY

The game is one of the "walk-through levels" breed where you step into a room and then either take a trip up the stairs or move onto the next screen. When you move from room to room the screen fades to black and then reappears with you in the next location. This effect takes place quickly enough to prevent it from being distracting.

After eating everyone on a particular level you must then return to your coffin for regeneration. You can return there at any point in the game if your health is suffering and you want to recover, but regeneration will take some time if you do it this way. The best method of improving your health is to do a spot of blood-sucking since this causes you to rejuvenate instantly. If you thought all of this sounds a little too easy then a few additional elements have been added to change all that. You have to get back to your coffin before the sun comes up.

Additionally, as you progress then you meet a range of unhealthy creatures with the singular objective of sapping your health at a phenomenal rate. It's impossible to kill them so the only course of action is to dodge these unfortunate monstrosities.

STILLS
0 1 2 3 4 5

ANIMATION
0 1 2 3 4 5

SOUNDTRACK
0 1 2 3 4 5

LASTING INTEREST
0 1 2 3 4 5

OVERALL 88%

CONCLUSION

Despite the truly astonishing visuals and a soundtrack that just leaves everything else standing, *Fright Night* lacks the sort of depth to make it addictive for any long periods of time. With the sole objective being to suck the blood of all the humans and avoid all the attention from the monsters, it's not really the sort of thing likely to tax your brain too much. However it's unusual to take on the role of the bad guy, and with the sort of visual treat on offer it's certain to be a hit.

Mark Higham

▲ Back to the coffin for some healthy regeneration.

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JUG

MICRODEAL

ST – £19.95. Mouse, Joystick and keyboard.

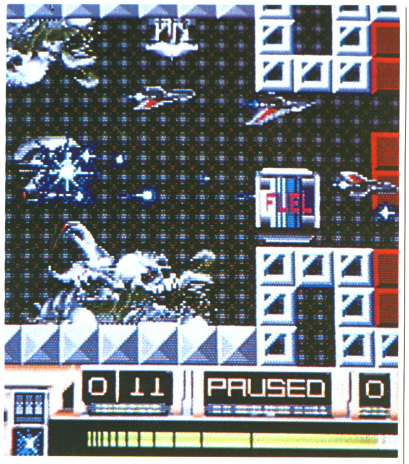
Amiga – £19.95. Imminent.

The scrolling shoot-em-up; that ever-popular brand of game with enough relatives in its dynastic clan to rival even a Hollywood soap. Microdeal's latest addition, *JUG*, takes you into the annals of a perishing planet.

Not in this land, nor in any other, will you set eyes on a creature as odd as JUG. He's stepped into the living core of Spiraeus – a planet invaded by a deadly virus which has an in-built brief to destroy the brain which keeps Spiraeus alive. The inner sanctums, those passionless areas devoid of life, are now perishing at the hands of this virus. With four zones, each one subdivided into four sectors, it's your duty to rescue the planet from annihilation.

By moving your zealous character through different sectors you come across weaponry which may be retrieved. These transform JUG into three states, two of which give improved firepower while the third provides a brilliant smart-bomb which obliterates everything on screen.

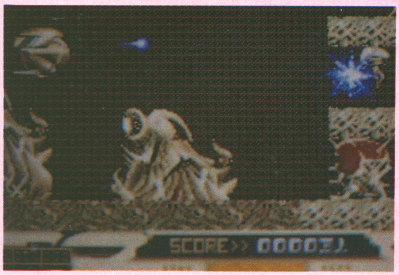
The way *JUG* works necessitates moving the joystick in the direction you wish to travel. There is no downward stroke because JUG moves down when you don't direct him otherwise. Pushing up will decrease your fuel until you run out altogether. When this happens upward movement ceases to be possible until your fuel status has been improved.



▲ Microdeal's JUG takes you through sixteen different sectors in a bid to rid the planet Spiraeus of a deadly virus.Fuel pods, shown in blue, are scattered around the maze to help keep you afloat. Your fuel levels improve slowly while you're not directing JUG upwards but for any major upward movements you'll need to find a fuel pod. Failure to do so will see you living a life like EastEnder's Ange - all downhill and that's no fun at all.

GRAPHICS AND SOUND

The aliens aren't a particularly impressive bunch. A family of spinning wheels is about the closest you'll get to anything impressive. The objects look uncannily simliar to some of the aliens found in *R-Type*; sadly though they lack the colour and size which might have made them electrifying. Derth of colour is a criticism which should be levelled at the entire JUG scene. Nothing has been explored to the kind of extent possible; even sound lacks those qualities which could have made the game more exciting. Sound effects are limited to a few casual beeps and squeeks.



STILLS 0 1 2 3 4 5

ANIMATION 0 1 2 3 4 5

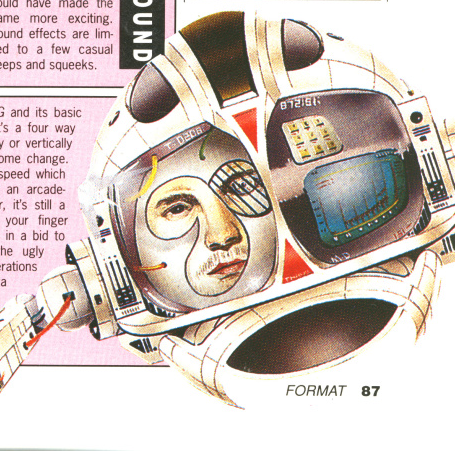
SOUNDTRACK 0 1 2 3 4 5

LASTING INTEREST 0 1 2 3 4 5

OVERALL 72%

CONCLUSION

Despite its unimpressive graphics routines, the maze style of *JUG* and its basic shoot-em-up principles certainly make it an addictive challenge. It's a four way scrolling game so it's certainly nothing like the old-style horizontally or vertically scrolling blast-everything-to-bits game which always makes a welcome change. Unfortunately, like Microdeal's recent *Slip Stream*, *JUG* lacks the speed which would have given it an arcade-quality feel. However, it's still a game which keeps your finger glued to the joystick in a bid to rid the planet of the ugly aliens. With alterations planned for the Amiga version, speed could be a problem of the past.



▲ On the bridge. Using the fire button brings out a lethal chain which you can use against persistent characters. If you depend on it too much then it'll be whipped out of your hand.

VIGILANTE

US GOLD

Amiga – £14.95. Joystick. Reviewed. **ST – Available soon. £14.95**

If you thought the only way of transforming mankind into repugnant monsters was by dropping the Bomb, and making melting flesh into a fashion trend, then *Vigilante* offers you an insight into 1994 New York where absolutely everyone wants to wrap a crowbar around your neck.

It has been lovingly converted from the IREM arcade machine which, unlike the majority of street-fighting games, saw you obeying a vague plot. The idea is that in 1994 the street slime – which once made a home in the gutter – have slithered onto the turf of respectable people. Being generally offensive creatures with a penchant for the type of haircut likely to make their mother think twice about giving them a bottle of Brut for Christmas, they have executed a plan to kidnap Madonna. Even though you're fending off Sean Penn-type characters, she's no relation to the *real* Madonna.

In true *R-Type* fashion you move through a scrolling backdrop warding off everything from guys with pistols to persistent green-jacketed creatures. A few chainsaw masochists are thrown in for good measure. At the end of each level there's a large chap who must be destroyed to get onto the next stage. Five levels take you from the main street, through a junkyard, Brooklyn Bridge and the back streets to a construction scene where Madonna is winched into the air. You must employ a whole host of high foot-kicks to win here.

GRAPHICS AND SOUND

Graphically, *Vigilante* bears an astonishing resemblance to its arcade parent. The movement isn't as smooth as it should be and gameplay slows down when the scrolling starts. However, a wide variety of street gangs keep the pace going so you probably won't notice. Death is one of those tiresome faults to living; a health panel at the top of the screen lets you know how far away you are from an invite to tea with the Almighty. Instead of dropping down dead your foes tumble off the pavement as if it were a crumbling cliff top.

Vigilante has the usual range of noises accompanying each blow to your torso. Here they've been sampled from the arcade game – however, they're nothing inspiring. To accompany this is some awful loading music which is certain to have you reaching for the volume control.

▲ Mighty footkicks are easily made by waggling the joystick.

CONCLUSION

Surviving different characters requires you to lay into them at just the right time. The joystick is extremely responsive in this area so you can tackle all your foes with relative ease by employing any of eight different movements. Real problems occur when you're confronted with more than one skinhead at a time. You can find yourself gripped at the neck by one of the green-jacketed guys while another is sawing off your legs.

This is one of the better street-fighting games – certainly in a superior league to the likes of *Double Dragon* – despite lengthy disk accesses. However, in the end it offers little more than a multitude of blood-splattered body blows obeying the age-old street-fighting principles of punch everything that moves until you've been kicked to death.

Mark Higham

STILLS 0 1 2 3 4 5

ANIMATION 0 1 2 3 4 5

SOUNDTRACK 0 1 2 3 4 5

LASTING INTEREST 0 1 2 3 4 5

OVERALL 70%

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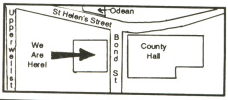

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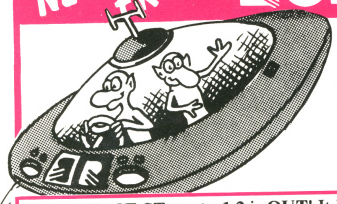

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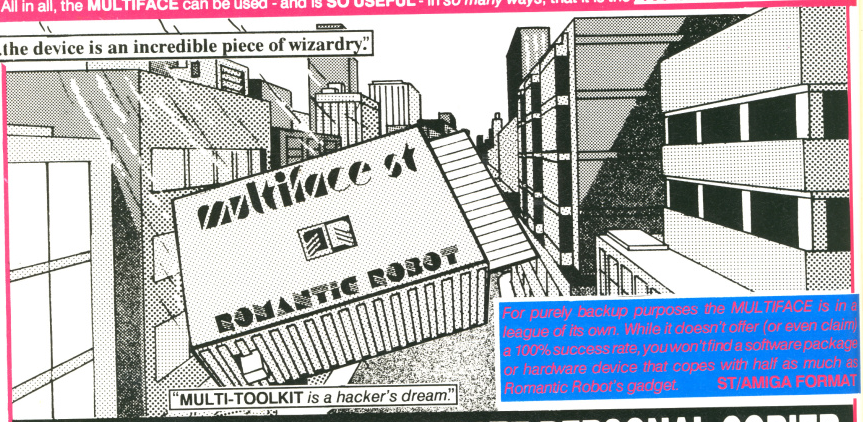

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GAME BUSTERS

When the heat's on you and you need a rest; when you're beaten blue and you've tried your best; where ya gonna go? Gamebusters! Stay tuned for the latest and greatest gameplaying tips.

R-TYPE

ST

On the title screen – when it asks you to insert disk 2 – press the [HELP] key, type 'ME' and then press the up arrow. Now insert disk B as usual. Press space to begin. Start the game and press the following for various cheats:

F5 – invulnerability from walls and aliens.

F6 – invulnerability from alien fire.

F7 – infinite credits.

F8 – a partner can take control of the orb by using the mouse.

Andrew Clarke
Hornchurch, Essex

HEROES OF THE LANCE

ST

Use the 'find traps' spell often as falling rocks tend to severely damage your team. Always put Flint first, Goldmoon third and Tanis fourth in your party. During the early stages the only real problem in combat should be the hatchlings; use your 'Deflect Dragon Breath' spell and get Tanis to the front. Shoot at the hatchlings stomach. Five or six well placed arrows will dispose of it.

V Childs
Watford, Herts

GALDREGON'S DOMAIN

ST & Amiga

The secret of solving the game is to find five particular objects which allow you to kill the guardians of the five gems. You should keep your strength and stamina high and only fight if forced to do so. Keep your characteristics on display at all times – objects are just lying around and this is the only way to spot them.

Gem 1: this is guarded by a Lich in Rotari's castle. You need to get the cross from the demon master's tower to kill him.

Gem 2: this is in the caves of doom and is guarded by a rock monster. Kill characters in the cave until you find a diamond. Kill rock monster.

Gem 3: in the Catacombs below the temple of Set. It's guarded by a demon which can only be killed while you carry a ceremonial dagger. Kill priests in the large room in the East of the temple to find the dagger and a key to unlock the demon's chamber.

Gem 4: at the SW corner of the map is a hidden labyrinth. Enter it and kill Minotaurs until you find a key and a mirror. Find the Medusa and kill her to get the gemstone.

Gem 5: go to the forest of the Elves in the West. Kill the Elf Lord and take his Elven cloak. Go to the Assassin's forest in the SE. Find the leader and kill him. Get Gem. Return all five gems to the king.

M Wigfield
Manchester

DRAGON'S LAIR

Amiga

When the screens are reversed the moves are reversed.

Drawbridge: press fire to kill the tentacles, then up to climb through the hole. Poison Room: keep pressing right to go through the door. Stairwell: (stairs going left) press right to jump the first set, left to jump the second set. Tentacle room: (door on right) pressfire straight away to kill the first tentacle, push forward to jump to the weapons rack, right to jump to the door, back to jump to the stairs, left to jump onto the table, and finally forward to go through the door.

Whirlpools and rapids: (first whirlpool on right) press left to get past the first whirlpool, right to get past the second, left to get past the third and finally right to get past the last.

Rapids: press left then forward to get past the first screen, forward to get past the second, right then forward to get past the third and then forward to get past the fourth. This is then repeated.

Slime monster: (door on the right) push forward to jump to the potions, repeatedly press fire to kill the slime monster and then press right twice to run through the door.

Chequerboard: (Knight's sword on left) to avoid the bolts of charge press right, left, forward, left, right, left, right, and finally fire to kill the black knight.

Rolling Balls: make Dirk run each time one of the coloured balls appears. Repeat this for each ball. The wall: keep pressing forward to go through the hole in the wall.

Singe's treasure room: (cups on the left) press left so Dirk stabilises the cups otherwise he will be frazzled by Singe, press right and then down to avoid Singes breath, and finally press down to catch the column of cups and saucers.

Final encounter: (Singe's head on the left) press down to avoid Singe's hands, then left to run to the magic sword. Dirk must then dodge Singe's tail three time by pressing down each time. Finally throw the magic sword at Singe by pressing the fire button. You have now completed the game.

Mark Blake
Chalfont St Peter, Bucks

ELITE

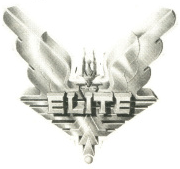
Amiga.
Mission 1
The enemy has stolen a government ship. It is called the CONSTRICTOR. It's very fast and installed with an ECM system. Your job is to destroy it, otherwise it will cause havoc in the system. If you complete it you will receive 400 bounty plus when you dock 10,000 credits.

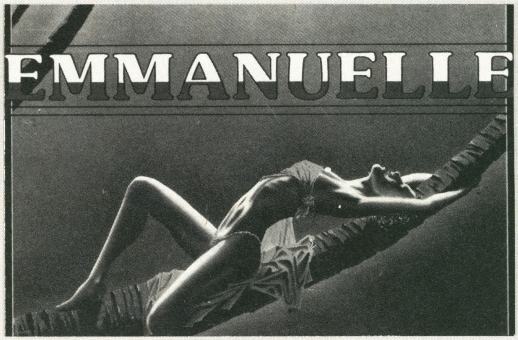
Mission 2
The government have got hold of some documents of thargoid invasion ships. Your job is to take them to a planet somewhere in the galaxy. As soon as you hyperspace from a place you are bothered by thargoids after the documents. There are two ways of completing this mission, one way is hard the other is almost easy. The hard way is to fight your way across the galaxy or the easy way is to find a route by using tech. levels of 6 or over so you can hyperspace into a planets system then escape capsule all the way. There are about two plants you have to fight your way into. It's hard but can be done. If you complete it you receive a NAVEL ENERGY UNIT which builds up your energy twice as fast and cools down your laser too.

Mission 3
The sun has gone super-nova and can blow any minute. The people in the space station want you to save them. If you do it the people give you a gift of 1kg of Zanxian Gem Stones which are worth about 21015.2 credits. Before docking to save the people a warning appears saying Fuel Leak. Don't dock but skim the sun for more fuel and then save the people.

Mission 4
The government has received information of a ship which makes your on board computer go funny. Your job is to destroy the ship, but there's a few problems when you shoot it disappears then reappears somewhere else. It also is installed with an ECM system so don't bother missiling it. If you complete it you get 500 bounty.

Simon A Edwards
Bewdley, Worcs





EMMANUELLE

ST & Amiga
Your first task is to collect the three statuettes. The first of which is situated in Rio. It can be attained by clicking on the beach. You will notice a yacht; click on the yacht and a rather irate captain will appear. Tell him 'I'm looking for adventure' and he will give you a trinket of aphrodisiac potion. Once done, stay on the beach, and click on the series of buildings nearest the mountain: you will enter the casino. Buy a cigar from the woman with the tray and give it to the bloke sitting at the roulette table. He will take you away and eventually give you a statue. Next go to Favelas – which is on the mountain in Rio – and buy the toucan.

Fly to Igacua and click on the cliff at the waterfalls. You will be treated to a truly dreadful animation sequence that results in the capture of the second statue. While you're here, it's time for you to lose your virginity! If there's a girl in blue at the reception area then try and chat her up. If you fail, or she isn't here, then go to the waterfalls and come back again; continue until you're successful.

Now travel to Manuas and tell the doorman that you want to go to the opera house. If he says "it's closed but I can get you in at a price", accept. If you travel straight to the opera house and you're told the performance is over, keep on trying as your reward is the final statue! Once accomplished click on the lift button and with any luck another young floozie will appear in the lift. Ask her if she can read between the floors. Be warned; if you cock it up, she won't come back! With that you will magically transport to a garden party. There you will see more floozies, including the one that you have already b*nked; click on her and give her the item at the bottom right corner when prompted. Then tell her how sensual she looks and how all the men have been staring at her! With that she will obligingly drop her knickers out of the window and one of your statues will flash.

Travel to Salvador and tell the doorman you want to go to the lower town. Hopefully you will see a yacht. If not go back to the hotel and down to the lower town again. It's certain to be there the second time!. Now click on the yacht and... surprise, surprise ...yet another young floozie. She will take you to Rio and give you an enjoyable time on the way. At Rio there will be two floozies waving at you! Click on the left hand girl and chat her up with either a phrase that includes art, music or instruments. Both will be required, but they can come in any order. Accept a naughty night with her and the other girl will ask to join in (jolly decent of her!).

Once completed you should now have enough eroticism to find Emmanuelle. Bet you forgot about her, didn't you? If your eroticism is over 75, go to the hotel and try to find the barman. Once found ask him about Emmanuelle's next destination. If he doesn't know then you've got to repeat the procedure. Eventually you will ween out of him the information you require. That done, go to the airport and you'll meet her!

If you're wondering about using the third statue, try chatting up the floozie at the reception in Salvador. If you're successful then she might just tell you the room number of a bloke you need to see. If she doesn't (which is 99.9% of the time), don't jump in bed with her as it uses vital eroticism and energy. If you get the number, then go to the appropriate room and a bloke will give you some tips and also a mask. With that mask you will be able to go to the carnival at the top of town where you chat up the girl in the foreground with the mask. By b*nking her you'll have achieved all three things.

A few useful tips: the woman at the reception area in Rio gives you an energy restorer and keeps coming back if you don't... you know what. The helicopter serves no use at all (other than giving you extra strength in fights). If, at the hotel reception, you ask the man if Emmanuelle'is staying at the hotel and he gives a room number, visit it for the best... errrr, worst scene in the game! (depending on your point of view).

Arron Hawke
Welwyn Garden City, Herts

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This months winners are: Andrew Clarke for his dodges on *R-Type*. Roaring his way are several smashing ST games.Arron Hawke for giving the game away in *Emmanuelle*. Steaming Amiga goodies heading his way.

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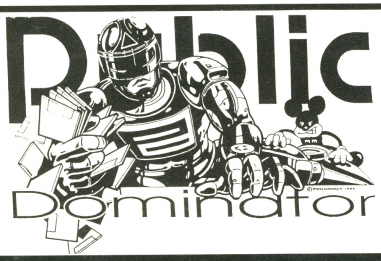

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PD UPDATE

What do you do when your Ferrari Testarossa has a flat, Dirk the Daring and Singe the Dragon have kissed and made up, and WordPerfect doesn't seem so perfect anymore? Take a trip down to the PD libraries of course! Take a trip with JASON HOLBORN and discover the latest and greatest in PD-ware .

AMIGA

All the programs listed within this month's Amiga PD Update were taken from the Fred Fish collection of public domain disks. Many of the programs are also available within other libraries, but the disk numbers quoted refer only to the Fish collection.

PLATINUM

ESCAPE FROM JOVI DISK 148

Escape from Jovi is an adaptation of the old arcade favourite *Lunar Lander* with a difference; instead of trying to land on some barren planetary surface, you've got to try your utmost to escape out into deep space before the planet explodes. Sounds easy? Don't be too sure about that, matey, as standing between you and the relative safety of space is a hazardous maze of lunar caves.

EFJ is one of the finest PD games available and even manages to give some of the best eight-bit games a run for their money. The game employs multi-directional smooth scrolling graphics and sampled sounds to give you that true arcade feel.

PLATINUM

TASK CONTROL DISK 95

When the Amiga was first released back in 1985, the machine was hailed as state of the art. Everything that both users and programmers alike had been crying out for for years was there in one little box; the Amiga was a truly a complete 'multi-media' machine.

Not only was the Amiga hardware hailed as state of the art, but the multi-tasking operating system was greeted with gasps of delights from happy users worldwide. However, after several years of hard use, the Amiga operating system is no longer viewed with such enthusiasm, in fact it probably has more enemies than friends.

The reason for this hostility is the unstable nature of the multi-tasking executive. Whereas only a few years ago users used to talk about the amount of data that the Amiga could process at one time, these days the conversation centres around the amount data that can be *lost* at any one time!

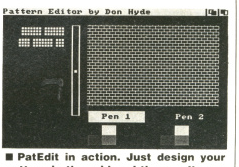
Several very powerful utilities exist within the public domain to make the Amiga operating system a safer place to work in. The most notable among them include *Gomf* (as featured on issue five's Format cover disk) and *Task Control*.

Task Control is a very nicely done program that will allow you to keep close watch on all tasks currently running in your Amiga. If a program does go out of control, with *Task Control* you can kill it dead before it can do any serious harm.

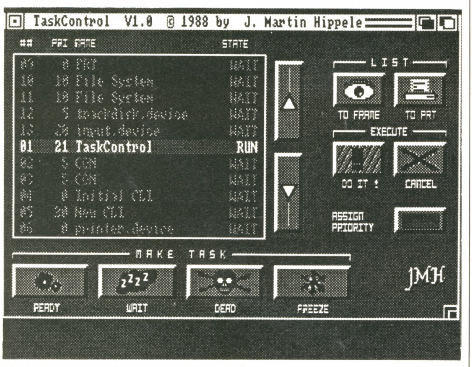
Other powerful facilities it offers include the ability to put a task 'to sleep' so that it does not take up any processor time. This can be useful if you are running a program that is very processor intensive such as ray tracing packages.

PATEDIT DISK 130

Programming the Amiga through the systems software in a language such as C can be a tiring, tedious and long-winded affair to say the least. Achieving even the most mundane of tasks requires a large number of data structures (structs)



■ **PatEdit in action. Just design your pattern in the grid and the results are displayed instantly.**



■ **Task Control keeping exec under control.**

AMIGA: BEST OF THE REST

Choosing programs from the vast amount of quality software within the Amiga PD libraries can be a bewildering task. Below is a list of a couple of programs that are well worth checking out.

■ Guardian ■ Disk 154 ■ One of the best PD virus detectors/killers. Guardian sits in the background and even survives resets and crashes. When you try to boot from a floppy disk, Guardian automatically checks the disk before it can gain control of the machine

■ Gauge ■ Disk 111 ■ A very handy program that continuously displays system memory usage in a vertical bar graph.

to be set up before you even start thinking about the program itself.

With systems software as bad as the Amiga's, it therefore comes as no surprise that many utilities have been written to take the pain out of this first stage in software development. Probably the most famous program of this genre is *Power Windows*, a window, requesters and gadget editor that generates source code in various languages, that can be pulled straight into your programs,

PatEdit is a handy little utility that allows you to design patterns for use with the `SetAfPt()` macro. All you have to do is draw your pattern in a fixed grid and the program then outputs the appropriate system structure in C source code.

THE SUPPLIERS

In the UK, the following companies are responsible for distribution of ST and Amiga PD software. To find their full addresses, give them a ring or scan the advertising pages.

AMIGA

George Thomson – 077082 234

Ray Burt Frost – 0703 785680

Amiga PD Unlimited Softville – 0705 266509

Purple PD – 0279 757692

ST

ST UK – 0279 757692

The ST Club – 0602 410241

Goodman PD – 0782 335650

FloppyShop ST – 0224 691824

Page 6 – 0785 213928

Softville – 0705 266509

Star UK – 0224 593024

B-Soft – 0734 416492

ST

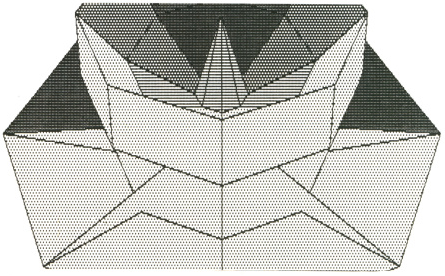
The programs listed within this months ST PD Update were taken from the FloppyShop collection of disks and therefore all numbers quoted refer to that library. Many of the programs can also be found in other libraries.

PLATINUM

ST WRITER WRD.07

If there is one single application that has most revolutionised the way we work, it must surely be the word processor. The word processor market is one of the largest in the computer industry and many companies have grown up to serve the public need for more and more complex word processing packages. You'll find virtually every make of computer in existence has at least one word processor available for it; you can even word process on a Sinclair ZX81 if you really wanted to!

ST Writer is a word processor written by Atari and placed in the public domain for general distribution. "Public domain word processor? It can't be a lot of cop matey!". But no, *ST Writer* is in fact a very powerful little program that includes all the standard functions you'd expect to find in a program of this type, plus a few more besides. From within *ST Writer*, you can edit your text and



■ **Three Dimensional graphics made easy with Design 3D.**

then perform any number of powerful editing features such as cutting, copying and pasting.

If you need a word processor, but can't afford the likes of *Protext*, *First Word Plus* or *WordPerfect*, then *ST Writer* is a definite must. The program is fast, powerful and very easy to use (it's also undeniably cheap!) and is a worthy PD Platinum winner.

FAST COPY 2 UTL.36

Carrying out a straight-forward disk copy operation from the desktop isn't quite as straight-forward as it should be. In an ideal world, all you should have to do is put your source disk in drive A, your destination disk in drive B and then drag the floppy drive A icon on top of the icon for drive B.

Unfortunately the Atari systems software programmers obviously thought that would be far too simple! In reality, before you can even think about copying a disk, you have to first format your destination disk to the same capacity of your source disk. Why can't you copy a single sided disk onto a double sided disk? Only Atari know the answer to that one!

Fast Copy 2 is a very nicely presented disk copier that will allow you to rapidly backup all those valuable data disks that always seem to attract the drips from your cups of coffee. What *Fast Copy 2* won't do is to copy protected software, such as games; 'cause that's ain't morally right see!

If you're in need of a very simple way of backing up disks, then *Fast Copy 2* is well worth investigating.

PLATINUM

DESIGN 3D ART.05

Using three-dimensional graphics at even the simplest level can be a daunting and often frustrating experience for those of us who don't have a degree in matrix transformations. Even so-called professional packages that claim to take the drudgery out of 3D maths, can often reduce you to a state of bewilderment. Does a package exist that allows even the most idiotic of people (Format staff writers for example) create convincing 3D objects? You bet it does!

Design 3D is a very simple little program that allows you to draw an object in two dimensions and then have your creation pulled into the exciting world of the third dimension. Once you've drawn your object, you can rotate it at varying angles and at varying speeds. During this process, your object is displayed in wire frame, but just press the 'P' key and *Design 3D* will turn the current frame into a solid, full shaded representation.

Unfortunately, using *Design 3D* is made slightly more difficult by the fact that no instructions are included. Thankfully, the program is fairly easy to use and so it shouldn't be long before you're creating objects worthy of *StarGlider 2*.

ST: BEST OF THE REST

The ST PD libraries are brimming over with quality programs and it's impossible for us to cover all of them in-depth within PD Update. Below is a list of programs that didn't quite make it. The disk numbers quoted below refer to the ST UK collection.

■ NL10 Font Designer ■ Disk A45 ■ A very useful program for all you Star NL10 printer users. Design fonts and then download them to your NL10. Should work fine with the LC10.

■ Stonage Deluxe ■ Disk G13 ■ A PD classic and a definite must for any discerning PD collector. Stonage is a Boulderdash type game that even includes its own screen designer.

```
B12 D4 F0 H5 J0 L10 R70 S2 T12 V132K
K
K
Dear Bank Manager,K
K
    Give me some cash as I haven't got
any and you've got loads matey! If you
don't give me loads of dosh, I'll be
forced to sell those pictures of you
to the Guardian. You have been warned!K
K
Yours sincerely,K
K
K
Ivor Biggun.K
```

```
....^....^....^....^....^....^....^....
Free mem.:  221922 Line:  1Column:   11
Press ESC to return to menu.
```

■ **ST Writer editing a text file. Just press escape and you'll be transported to the options screen.**

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ASSEMBLE YOURSELF

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If the word at location 20 contains the number 515 then MOVE 20,D0 places 515 in D0. If you wanted to move the number 20 into D0 then you would have to use a hash (#): MOVE #20,D0

The term 'addressing mode' simply refers to the method by which data is found or placed, nothing more. So far you have encountered three addressing modes: absolute, direct and immediate. The instruction MOVE 20,D0 is an example of absolute addressing. It reads the word from memory location 20 and does a direct address write into register D0. MOVE #20,D0 uses immediate addressing to find the 20. In this case 20 is said to be immediate data and is held as part of the instruction.

The 68000 provides several powerful addressing modes. Some may look quite complicated, but in fact are just variations on a theme. They are simply methods of finding and saving data. All the 68000 addressing modes are listed here; they will be fully explained in due course. Don't concern yourself with the last one; it may be convenient in some circumstances, but you can write good programs without using it! The examples use the first operand to illustrate the use of the addressing mode.

Screen tricks

The computer screen occupies 32000 bytes of memory. It may be cleared by moving 0 into each byte as in the following program:

```
        MOVEA.L A5,A0 get screen
base address
        MOVE #32000,D0 repeat
32000 times
loop    MOVE.B #0,(A0)+   clear 1
byte
        SUB #1,D0 count down
        BNE loop repeat until D0
is 0
```

In the third instruction the byte of immediate data (0) is moved into the memory location pointed to by A0. Then postincrement addressing automatically moves A0 to point to the next byte.

The last instruction is called a conditional branch; it instructs the 68000 to load its PC register with the program address at 'loop' if the Z flag is clear (that is, not equal). Hence, the last three instructions constitute a program loop. 'Loop' is known as a label and is merely a word selected by the programmer. It could have been 'dog' or 'brassica', but 'loop' actually conveys some meaning!

The number in D0 (initially 32000) is counted down until it reaches zero. BNE loop means branch (jump) to 'loop' while not zero. Note also that a comment may be placed after an instruction on the same line provided a space lies before it.

There are several ways to improve this program. For instance it would be quicker to clear longwords rather than bytes:

```
        MOVEA.L A5,A0
        MOVE #32000/4,D04  bytes
per longword
loop  MOVE.L   #0,(A0)+ clear a
longword
        SUB #1,D0  count down
        BNE loop repeat if nec-
essary
```

The '.L' in the third instruction not only ensures that a longword is cleared, but tells the 68000 to increment the A0 register by 4 during postincrement addressing.

It is quicker to write data from a register than as immediate data:

```
        MOVEA.L A5,A0
        MOVEQ    #0,D0
        MOVE     #32000/4,D1 ini-
tial count
loop  MOVE.L   D0,(A0)+    clear
longword
        SUB #1,D1 count down
        BNE Loop repeat if nec-
essary
```

The second instruction in the code given above is an especially fast one provided by the 68000. MOVEQ allows immediate

HEXADECIMAL NUMBERS

Hexadecimal numbers have digits which take values from 0 to 15. Because there isn't a single character for numbers from 10 to 15, the letters A to F are used instead. The base 16 number system is very convenient for programmers since the range of digits fits neatly into a nibble (4 bits), vis:

Hex	Binary	Decimal
0	0000	0
1	0001	1
2	0010	2
3	0011	3
4	0100	4
5	0101	5
6	0110	6
7	0111	7
8	1000	8
9	1001	9
A	1010	10
B	1011	11
C	1100	12
D	1101	13
E	1110	14
F	1111	15

A byte may contain numbers in the range 0 to 255 decimal or 0 to FF hexadecimal. The name hexadecimal is often referred to as 'hex' for short and the dollar symbol ($) when used as a prefix denotes a hex number. Incidently, the percentage symbol (%) when used as a prefix indicates a binary number.

Hexadecimal numbers are very useful: when you're used to them your can immediately see the bit mask they represent – $FE7C is much more meaningful when dealing with bit images than its decimal equivalent 65148. Hex is good as binary shorthand whereas decimal is just a jumble of digits.

Don't be concerned if you're not fluent in hex, you can easily get by without it. You'll find it grows on you with casual usage.

OPENING ADDRESS

This month's assembler tutorial looks at the instructions you can use to move numbers around in memory. The memory locations where the instructions are stored are called addresses, so addressing is simply the method employed to tell the processor which memory location you wish to look into.

ASSEMBLING WITH HISOFT'S DEVPAC

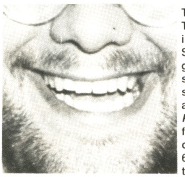
Two assembly language programs are provided on the disk for you to place at the start and at the end of your programs. You don't need to know what the code does; it will be explained in a later article. This code is held in the file SOURCE2.S on the Format Superdisk.

Run the *Devpac* assembler – found on the issue 10 disk – by double clicking on the GENST.PRG icon (ST) or by double clicking on theGenAm icon (Amiga). Insert the issue 11 disk. Select Load from the File (ST) or Project (Amiga) menu. ST users may simply click on the SOURCE2.S file. Amiga owners will have to click in the input box, type df0:SOURCE2.S then click on OK.

Examine the program. Note that instructions are always indented on a line (this leaves room for a label; see elsewhere), there is only one instruction per line, and a comment line starts with an asterisk (*). Instructions may be followed by a comment on the same line provided a space (or tab) separates them.

Assemble the code: select Assemble from the Options menu, type TEST.TOS (ST) or ram:Test.O (Amiga) and click on OK. Double click on the program's icon from the desktop (ST) or type ram:Test.O at the CLI prompt (Amiga). The program simply waits for you to press [Return].

TUBBY FOSTER IN THE EIGHTIES



Tubby Orfield Foster – Terrance to his mum, Terry to passing acquaintances, and Tubby to an intimate circle of rogues – first joined Eigen Software in the early eighties as gardener and general maintenance operative. In those days he spent much time peering over programmers' shoulders or sloping off to the greenhouse with a purloined copy of Motorola's *68000 Programmer's Reference Manual*. From such formative beginnings he has risen to become one of the most highly respected and influential 68000 programmers in the bread and confectionary industry having written such classics as *The Cheese Spreadsheet* and *Scone Management Networking 7.1*.

We reluctantly contracted to employ Tubby as a gardener for as long as he could reasonably cultivate vegetables on our land – he is a horticultural expert. Unfortunately, Tubby feels honour-bound to fulfill this role in spite of much coercion from ourselves and head-hunters from IBM, Microsoft, the Baker's Guild and other of their ilk. Consequently we have little influence over Tubby's programming activities.

Tubby is currently compiling a CD-ROM entitled *The History of Spanking in the Police Force*. If you, gentle reader, have any material relating to this subject, or other Masonic Rites, Tubby would like to hear from you.

The Management, Eigen Software

COVERDISK OOPS CORNER!

Oops! If you've been hunting through our cover disk trying to find the file SOURCE2.S, you have probably already realised that it isn't technically where it should be (ok, so it isn't actually on the disk at all!). However, SOURCE2.S will be on next month's disk. Rest assured that the person responsible has been beaten over the head with a copy of the Amiga ROM Kernel manual.

data from –128 to 127 to be moved into a data register quickly; all 32 bits are affected.

In fact, it is possible to improve the speed of the program still further! The 68000's designers recognised that people would want to use loops, so they created the DBRA instruction. DBRA uses a data register and a label: each time DBRA is encountered it decrements the contents of the data register and branches to the label if the count is not –1. DBRA stops looping at –1, rather than 0, for a very good reason. This will be discussed in the future. For now, just remember to start the initial count one less than that required.

```
        MOVEA.L A5,A0
        MOVEQ   #0,D0
        MOVE #32000/4-1,D1
adjust for DBRA
loop  MOVE.L  D0,(A0)+ loop is
now only
        DBRA D1,Loop two
instructions
```

This is the most compact way of writing a screen clearing routine. However, we can still increase the speed of the routine by improving the clearing/looping ratio for example:

```
        MOVEA.L A5,A0
        MOVEQ   #0,D0
        MOVE #32000/4/4-1,D1
four longs per iteration
loop  MOVE.L  D0,(A0)+
        MOVE.L  D0,(A0)+
        MOVE.L  D0,(A0)+
        MOVE.L  D0,(A0)+
        DBRA    D1,Loop
```

In this code the processor spends more time clearing the screen than looping. Almost always, when programming, a choice has to be made between compact code or slightly longer but faster code.

If you were to try running the last section of code you probably wouldn't see anything because the operating system provides a clear screen! However, try using something like MOVEQ #-1,D0 or MOVE.L #$F0F0F0F0,D0 as the second instruction and you will see the screen in another colour or with stripes. The $ sign means 'hexadecimal' (see box). More 68000 techniques next month, in the interim try experimenting with the 32000 byte screen.

68000 ADDRESSING MODES

Implied No operands appear because the data can only come from, or go to, one place. For instance, RTS. RTS takes data from the 'stack'. The stack will be dealt with in a future article.

Absolute Data comes from, or goes into, the memory location specified. MOVE 2314,D0 is such an example.

Immediate Data is part of the instruction. Like MOVE #5612,D7. The hash indicates immediate data.

Direct Data comes from, or goes into, a register. MOVE.L A2,D0 for example.

Indirect An address register points to the address where the data may be found or stored. MOVE (A1),D5. The parentheses indicate indirection.

Indirect with postincrement Data is pointed to by an address register, but the address register is incremented by the length of the data involved (1,2,4 bytes for .B, .W, and .L) after it is used. For instance, ADD (A3)+,D2. The plus (+) sign parentheses indicates a postincrement.

Indirect with predecrement The address register is first decremented by 1,2 or 4 bytes (according to .B, .W, or .L operation) before the data is handled. MOVE.B –(A1),D1 demonstrates this. A minus (-) sign before the parentheses determines a predecrement.

Indirect with displacement The data may be found or stored at a 16-bit offset (range 32767 to –32768) from an address register or the PC. MOVE.L 58(A6),D3 for example. The offset is the number before the parentheses.

Indirect with index and displacement The effective address is found by adding the contents of a register (.W or .L) to the address found in an address register or PC. An eight-bit displacement (range 127 to –128) is then added (address register contents are not affected by the instruction). Hence MOVE.L 22(A2,D3),D4. Displacement appears before the parentheses while the data or address register is included after a comma in the parentheses.

The 68000 provides a great many instructions, and it is worth noting that not all addressing modes are available for their operands. Reference should be made to a Motorola manual (one is included with *Devpac 2*).

DESKTOP

Managing your ST can be worse than tackling the accounts department of Barlow Clowes. If you survive long enough to see the dawning of your desktop then there's a whole load of features just ready and waiting. This month Mark Greatrix wins the £30 prize for his tips on reviving your mouse.

ROUGHING IT WITH STOS

An amusing effect employed in Motormouth's *Weird Dreams* is the magnify feature. A few pixels square are blown up using a special mosaic effect so that individual pixels actually occupy a much larger area than usual. It's very similar to taking a small area of the screen and then expanding it using a *Degas* or *Neochrome* package. A similar technique to this can easily be acheived from within STOS.

First copy the screen to a bank – five let's say. Then reduce the screen and enlarge it back again. Copy this screen to bank 6 and repeat the process using several different memory banks.

Then you should write a routine such as:

```
10 For n=5 to 10
20 Screen copy n to
Physic
30 Next n
```

This routine can be customised or used in a STOS game. The effects are generally pleasing.

A.S. Machin,
Eckington, Sheffield.

HARD PROBLEMS

Hard disks have this nasty problem which causes them to boot instantly from the hard disk instead of checking the floppy drive for a disk first and then booting from that. Whilst this practice might not seem to cause too many problems, it prompts very serious faults if you're trying to use AUTO folders.

In general it's a good idea never to use any AUTO folders or desktop accessories on a hard disk because, if there's some problem with these which causes your machine to crash, then you won't be able to get to the hard drive in order to fix the problem. This difficulty only serves to support the idea that all hard disks really ought to be regularly backed up.

Despite frequent boasts that they are the ultimate way of saving data, they can still crash more regularly than seems at all reasonable. When a hard disk goes down you have to kiss goodbye to at least 20Mbytes of files which can be an extremely heart rending experience.

Keith Cane
Hammersmith, London

MOUSE MADNESS

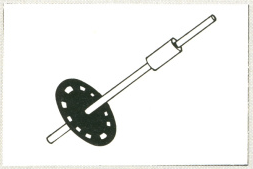
When you squeeze your mouse by his sides and push him up and down the desk only to find that he won't voluntarily budge an inch, don't pick him up by his tail and throw him against an exercise wheel. Some have suggested that he needs a good dose of alcohol to clean off all the dirt, but one of the worst things in the world is a drunken mouse. What you need to do is follow this guide to mouth to mouse resuscitation.

■ Very carefully remove the ball – this can cause considerable pain to your mouse so be gentle.

■ Turn your unfriendly fellow over and unscrew and remove the case. There are a few clips located along three of the sides of the case which must be opened to get access to his stomach.

■ Inside you will see two rollers with a disk on each one (figure 1).

■ Carefully remove these rollers by applying pressure to the small black plastic clips which secure them into place.



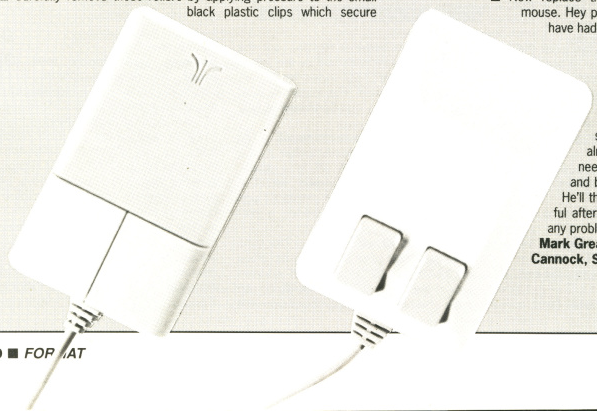
■ You'll find that the actual rollers are covered in strange grey matter – obviously the result of some bad digestion problems. Scrape off this material with your fingernail – don't worry, you won't tickle your mouse.

■ While the mouse is in pieces give the ball a good clean. This can make a huge difference to the way it grips smooth surfaces

■ Now replace the rollers and reassemble the mouse. Hey presto, your mouse might almost have had a body transplant.

By the way, after about a year of using him you'll find that he can swallow lots of dust. This causes particular problems with the micro-switches which can become so unresponsive at times that they're almost impossible to use. All you need to do is open up the fellow and breathe a blast of air inside him. He'll think you're God and be so grateful afterwards that he'll function without any problems at all.

Mark Greatrix
Cannock, Staffs.



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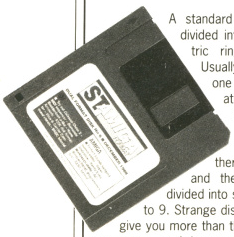
HOW STANDARD DISK FORMATTING WORKS



A standard formatted disk is divided into a set of concentric rings named tracks. Usually track 0 is the first one on a disk; located at the outside edge. The ring closest to the centre is track 79. Altogether there are 80 tracks and these are then sub-divided into sectors numbered 1 to 9. Strange disk formatters, which give you more than the usual 350K storage space, work by squeezing more sectors on each track. Every sector may be identified in the form: Track x, Sector y. This gives a simple format when applied to single-sided disks:

```
Track 0, sector 1 - boot sector
Track 0, sectors 1 to 6 - file
allocation table (FAT) one
Track 0, sector 7 to track 1,
sector 2 - FAT two
Track 1, sector 3 to track
1, sector 9 - directory
Track 2 to end of
disk - file space
```

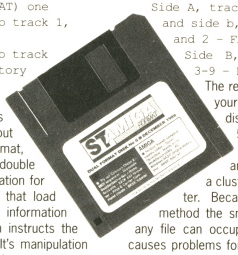
The boot sector holds simple information about the disk such as its format, disk type (single or double sided) and default information for the computer. Programs that load automatically often have information in the boot sector which instructs the computer to load a file. It's manipulation of the boot sector which can cause virus problems. By placing a virus in the boot sector it can be loaded from disk as soon as your ST is switched on and remain hidden inside the memory until you make a disk access; at this point it copies itself into a new boot sector. Certainly not an experience to be recommended – your ST can become schizophrenic and starts wiping away all your precious programs as if they've been struck down with flu.

The file allocation table (FAT) keeps track of how your files are stored on disk. For no reason at all, TOS keeps a backup of this – FAT two located in track 0.

The directory sectors hold the names of all the files which are active on disk. It is here that the file name is stored, the file size and the date and time of any changes recently made to the file. Also here is the address of the first cluster for that file.

On a double-sided disk this data is stored in a slightly different manner:

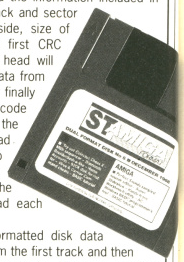
```
Side A, track 0, sector 1 - the
boot sector
Side A, track 0, sector 2 to 6 -
FAT two
  Side A, track 0, sectors 7 to 9
  and side b, track 0, sectors 1
  and 2 - FAT two
    Side B, Track 0, Sectors
    3-9 - Directory
```



The remainder of the disk holds your files. Each sector on a disk can hold a maximum of 512 bytes. In order to maximise space these are grouped together into a cluster: two sectors to a cluster. Because of this structuring method the smallest amount of space any file can occupy is 1K. This obviously causes problems for files under 1K in length because they can end up absorbing massive amounts of disk space.

A standard formatted disk contains 702 sectors which can be trimmed to just 351 clusters. The advantage to cutting down on this amount is that the FAT table – which keeps track of all of these – can be held in memory rather than loaded from disk each time. With hard disks there can be in excess of 40 thousand sectors so four sectors are grouped into each cluster.

Every sector on the disk is made up of a header, the file data and then a closing remark – the CRC. This is the cyclic redundancy code which exists to check for possible disk errors. As the disk head moves around the disk it will meet a new sector. Here, it will read the information included in the header – track and sector numbers, disk side, size of sector and the first CRC code. Then the head will read in all the data from the sector and finally the last CRC code which closes the sector. The head is now ready to read the next sector on the track. It will read each one in turn



On newly formatted disk data will be saved from the first track and then on to consecutive tracks. However, when a considerable amount of saving and erasing has occured, there will be spaces left on the disk so free sectors are filled with portions of a file. This is effective for saving space, but can dramatically slow the disk down.

MORE MOUSE MAYHEM

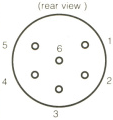
Certain magazines – not *Format* of course – have claimed that it's not possible to control the mouse from within ST Basic. They're all liars and don't know a thing about the ST. Despite the fact that ST Basic is probably one of the most ridiculed programs in history, so bad in fact that compilers have to write its bugs into their design in order to ensure compatibilty, taking control of the mouse is easier than you might think. The program below illustrates how to go about tackling this problem.

```
10 FULLW 2:CLEARW 2
20 GOTOXY 1,1: PRINT
"CAT A:\*.*"
30 BOX 6,8,81,20: BOX
7,9,80,19
40 ASK MOUSE X%,Y%,Z%
50 IF X%>6 ND X%<81
AND Y%>8 AND Y%<20 AND
Z%>0 THEN GOTO CATPRGA
ELSE GOTO 40
60 GOTO 40
70 CATPRGA:
80 GOTOXY 0,3:PRINT
90 PRINT "CONTENTS OF
DRIVE A:"
100 DIR
110 FOR N=0 TO 2000:
NEXT N
120 END
```

Darren Cassidy
Prestwich, Manchester.

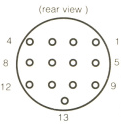
CPC'ING IT

After reading the article in last month's *ST Amiga Format* on connecting the Amiga to an Amstrad CPC monitor, I decided to do the same with an Atari. The socket should be wired as follows:



1 – Ground
2 – Composite/sync
3 – Blue
4 – Green
5 – Red

The red, green and blue outputs need resistors to get the brightness right. This is better than opening up the monitor (and safer). 120Ω worked best but experimentation is recommended.



The composite sync. can be taken from the composite video output.

Atari connections are as follows:

3 – composite video
7 – green
6 – red
11 – blue
13 – ground

This diagram is taken from the plug and, as such, is the reverse of that shown in the Atari manual.

Dermot Byrne,
Luton, Beds.

MONEY FOR NOTHING!

Yes, you have the chance of getting your mitts on loadsaloot! And at what cost to you? A few lousy lines of hints on getting the best out of a software package, or a hardware modification, or how to use the Desktop more efficiently or anything you feel will interest other avid ST users.

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Protext is the result of 4 years of development. Unlike the majority of competitive programs Protext is 100% British and is being developed further all the time in response to the needs of British users. Registered users are always informed when upgrades are available.

Atari ST: Unlike its competitors, Protext does not use Gem. The scrolling speed is four times faster than that of Gem based word processors. Yet Protext is still WYSIWYG and still allows access to desktop accessories.

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Amiga: PROTEXT uses the Amiga 'WIMP' interface fully and supports pull down menus, use of the mouse for cursor movement, block copying and window resizing. Protext is fully compatible with the Amiga's multi-tasking operating system and makes full use of Amiga Preferences settings.

"Protext really is the best text processor on the Amiga" ST/AMIGA FORMAT 2/89

A brief summary of some of Protext's features ...

Background printing	edit/create further files while printer is busy
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Configuration	set over 50 options to your own preferences using our menu driven configuration program
Dictionaries	add/delete words to/from supplied 70000 word dictionary. Create your own personal dictionaries.
Disc utilities	copy files, erase, rename, type, create directory, change directory, remove directory, catalogue files
Exec files	store sequences of commands in files for easy use
File conversion	flexible file conversion utility for other WP files
Find & replace	very powerful and fast with many options.
Foreign languages	10 built in keyboard languages. Easy to use accented letters: ä æ ç ö ü è é ß à ù ð ê ñ etc.
Formatting	auto-reformat; reformat para, block or whole text.
Headers & footers	up to 9 lines of text, different even/odd headers and footers, auto page numbering, footnotes.
Help	edit and command help available on-screen
Keyboard macros	string any sequence of letters together on a single key e.g. "Yours sincerely". Load and save macro key files. Special recording mode as you type.
Line drawing	ideal for drawing lines (incl. corners) around text
Line spacing	variable in half lines, including 0, ½, 1, 1½, 2, 2½, 3
Printer support	works with any parallel or serial printer. Wide range of printer drivers supplied,. incl. lasers and 24-pin printers; or create your own drivers or edit ours.
Printing styles	bold, condensed, double strike, elite, italics, enlarged, pica, NLQ, subscript, superscript, microspacing, proportional spacing, any other printer fonts
Program mode	suppresses formatting; auto-indent; set tab stops
Proportional text	will print proportionally spaced, right justified text
Quick dictionary	dictionary held in memory is very fast
Ruler lines	any number of ruler lines to define document layout left/right margins and normal/decimal tab stops
Spelling checker	check from disc or current text, as you type o afterwards. Suggests alternative spellings. Works with foreign languages
Symbols	full character set available on screen. Characte symbols may be redefined
Time and date	time shown on screen. Use date within document
Tutorial files	help you to start using Protext
Two file editing	two documents in memory, copy text between them
Typewriter mode	direct printing for envelopes etc.
Undelete	retrieve text deleted in error
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WORKBENCH

Explore the potential of your Amiga with Workbench. Whether it's tips on getting the most from your favourite wordprocessor or how to poke the very depths of Agnes, you'll find them here in abundance plus a lot more besides. This month's £30 winner is John Stanley for his DigiView tips.

Getting IFFy

One source of confusion for many new Amiga users is the IFF file format and the jargon that surrounds it. "Ok, I know what an IFF file is but what's all this about ILBM files and what about SMUS and 8SVX files?"

Contrary to what you may think, IFF is not a single file format for pictures. It is in fact just a common method of storing different types of data that was devised jointly by Electronic Arts and Commodore-Amiga in the early days of the Amiga. You'll find all sorts of different types of data stored in IFF format; there's an IFF type for sampled sound, two dimensional raster images (pictures to you and me!), animations and even music.

Each different IFF type is identified by its own individual four-byte string, called the IFF 'form'. For example, the IFF form for storing pictures is the ILBM file and the form for sampled sounds is the 8SVX. The form of an IFF file is used by programs to identify the particular IFF type before it is loaded. The major IFF forms are as follows:

ILBM – Picture files
8SVX – Sampled sound
ANIM – Animations
SMUS – Music scores
FTXT – Text files

Blinking LED!

The hardware designers at Amiga, Inc certainly got it right when they designed the Amiga hardware. Everything a programmer could possibly want to do could be handled by the hardware; there's hardware sprites, scrolling and even a programmable power light! Programmable power light? yep, that's right, you can even turn the power light on and off under software control! As an example, try resetting your Amiga and watch what happens to the power light.

The LED on and off switch is actually controlled through one of the peripheral control bytes in the Amiga CIAs which is located in memory at HEX BFE001 (decimal 12574721). Don't worry about the technicalities, accessing this line is very easy indeed.

This peripheral control byte actually handles not only the power LED, but the mouse and fire buttons on a joystick. Because this byte is multi-purpose, only one bit is allocated to the LED; bit number 2. Programming the LED through Assembler is very straight forward and is achieved by the line:

```
EORI.B #02,$BFE001
```

Unfortunately, achieving the same effect through AmigaBASIC is a little more involved:

```
A = PEEKB(12574721) XOR 2
POKEB 12574721, A
```

The LED control bit is in fact a toggle and therefore to turn the light back on after you've turned it off is just as easy. All you have to do is repeat the same procedure a second time.

Centre of Attention

If you've ever tried producing a tidy screen display from AmigaBASIC when using any font other than the standard system font, Topaz, then you'll be aware of the problems that can occur. They lie in the fact that the standard system font is not proportional, which means that each character takes up a standard number of pixels on screen (eight in Topaz' case), which is very convenient when calculating the location of text. The other Amiga fonts such as Garnet, Diamond etc are proportional which means that each character only takes up the bare minimum of pixels – an i is narrower than an m and so on.

Centring text in Topaz font is very easy to do, but what do you do when you are using a proportional font such as Ruby? Easy, just use the program below!

```
DECLARE FUNCTION TextLen-
gth% LIBRARY
LIBRARY "graphics
.library"
DisplayWidth = 617

Centre "This is a string
 of text...."
Centre ".... and this is
 another"

LIBRARY CLOSE
END

SUB Centre (text$) STATIC
SHARED DisplayWidth%

Length = TextLength%(WID-
OW(8), SADD(text$),
LEN(text$))
```

DigiView Tips Galore!

Those of you who are lucky enough to own NewTek's excellent DigiView Video Digitiser will be interested in the following selection of hints and tricks which will allow you to get the most from this powerful add-on.

■ If you have a video camera other than that recommended by NewTek, you may have noticed that the filter wheel supplied with DigiView doesn't always manage to completely cover the camera lens. If you do have this problem, it is very easily overcome.

You could replace the NewTek filter wheel with proper photographic colour filters like those manufactured by companies such as Cokin, but these are astronomically expensive. The solution comes in the form of acetate 'disco' filters. The filters to look for are the ones that are cut from sheets rather than the pre-molded variety. These can be picked up relatively cheaply and will probably cost you only £1.50 for a set of five different colours. Another advantage of these filters, apart from their price, is that they are ideally colour balanced and should in theory produce better results than the official NewTek filter wheel.

■ It is sometimes inconvenient to hold or place a filter between the camera and the subject. Try illuminating the subject with light from a 35mm slide projector using transparancies of red, green and blue acetate.

■ If you notice dark or black discs or trails which seem to be fixed to specific areas of your monitor screen while displaying the output from your video camera, don't jump to the conclusion that you have 'burn-outs' on the video tube (many second hand cameras have this problem). Unscrew the lens and try a photographer's blower brush in case there are bits of dust or hair on the front of the tube.

John Stanley
Wistaston, Crewe

```
Start% = (DisplayWidth% -
Length%) / 2

PRINT PTAB(Start%); text$
END SUB
```

P.M.Abel
Anytown

What's your Preference?

You all know how much fun customising your Workbench disk can be. From the Preference program you can define a mouse pointer of any shape, however rude, change the screen colours to tasteful shades of pink if you require, and you can even ruin your eyesight permanently by turning interlacing on.

What do you do therefore if you want to use the same configuration on another boot disk? You could run Preferences on the disk and set everything up from scratch, but that could take an awful long time. However, there is another way.

Hidden away in the DEVS directory of your Workbench disk is a rather obscure file called `system-configuration`. This file contains all the information about screen colours, shape of your mouse pointer, which printer you use, etc, and is read by the Amiga when a disk is booting. If this file does not exist, the Amiga reverts to the default settings (blue screen, white text etc).

If you want to use the set up from one boot disk on another, all you have to do is to copy this file across into the DEVS directory of the destination disk. It is as easy as that!

Peter Milne
Plymouth

THIRTY SMACKEROONIES UP FOR GRABS!

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Send your oodles of info to: WORKBENCH, ST AMIGA FORMAT, 4 QUEEN STREET, BATH, AVON BA1 1EJ.

BEGINNERS' CORNER

In last month's Beginners' Corner we took an in-depth look at the various fundamental components of the Amiga's disk operating system, AmigaDOS. We discussed volumes, devices and subdirectories and this month we'll actually start putting some of that theory into practice by getting our hands dirty with a few CLI commands.

This tutorial was written with the single drive Amiga user in mind. If you've got a dual drive system, the theory is not only the same but it is also considerably easier to put into practice. Most of the disk operations are carried out on either your standard Workbench disk that came with your machine or the AmigaDOS RAM drive. Don't worry if you still haven't got Workbench 1.3 either as all the commands will work with both Workbench 1.2 and 1.3 (though not Workbench 1.1).

The first thing we must do is to create a more workable environment for those of you with single drive Amigas. Enter the following commands at the CLI prompt. Don't worry about what they do for the meantime, as we'll explain them eventually.

```
COPY C:DIR|TYPE|DELETE|COPY RAM: <Press RETURN>
PATH RAM: ADD <Press RETURN>
```

The DIRect route

Probably the command that you will use most of all during you CLIing sessions is the old faithful DIR command. If you've used computers based around either CP/M or MS-DOS, then you'll feel instantly at home. The format of the DIR command is as follows:

```
DIR <Path Name>
```

The DIR command is used to display the files and subdirectories within a specified directory. If you do not specify a directory to be listed, the DIR command will automatically display the one that you are currently in. Now let's try it out.

As an example, if you had a disk in drive DF0: that contained a subdirectory called AMIGA which in turn contained a subdirectory called ATARI, to display the contents of the subdirectory ATARI, you would type:

```
DIR DF0:AMIGA/ATARI/ <Press RETURN>
```

Now that you've seen the format of the DIR command, try displaying the contents of the various subdirectories on your Workbench disk. When a directory listing is displayed, all subdirectories within that directory are marked by a <dir> symbol.

Moving around a disk

The next command that you will need to be aware of is CD. The CD command is used to change your current directory. When you first enter the CLI, your current directory is locked to drive DF0:, regardless of what disk you have in that drive. The format of the CD command is as follows:

```
CD <Path Name>
```

The CD command saves a lot of time typing out full pathnames of files as you can move into the directory they are in. For example, if you wanted to access a file that was held five subdirectories down from your current directory, typing in a path such as `DIR1/DIR2/DIR3/DIR4/DIR5/` every time you wanted to access that file could soon become tedious in the extreme. In this case, all you would have to do is to enter `CD DIR1/DIR2/DIR3/DIR4/DIR5/` and you can then access the files held within DIR5 directly.

If you then removed the disk and inserted a completely different disk, you must the tell AmigaDOS that you want the current directory be this new disk. This is achieved by typing (presuming you have the new disk in the internal drive):

```
CD DF0: <Press RETURN>
```

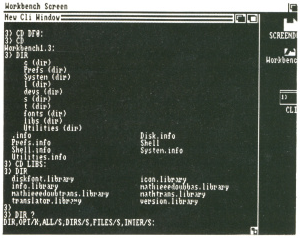
Now for some homework!

You are now completely able to move around the structure of a disk and get a listing of all the files and subdirectories held within specific directories. Well at least you ought to be!

The best way of getting the hang of something as complicated as AmigaDOS is to play around with it. As an exercise, have a go at roaming around the directory structure of a few of your disks. I'll expect your work in for marking next month!

Next month in Beginners' Corner we'll look at a few more of the commonest CLI commands such as TYPE, COPY and DELETE.

Didn't we tell you that learning AmigaDOS could be fun?



■ Moving around the directory tree of a standard Workbench disk. You too could soon get lost within the darker depths of AmigaDOS.

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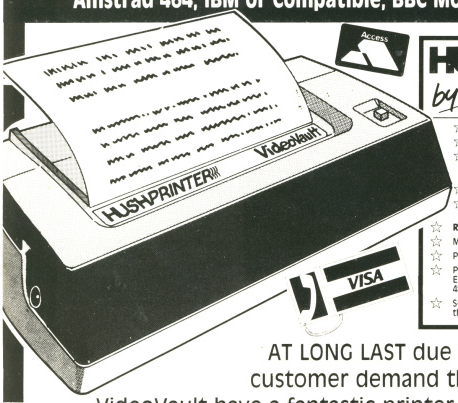

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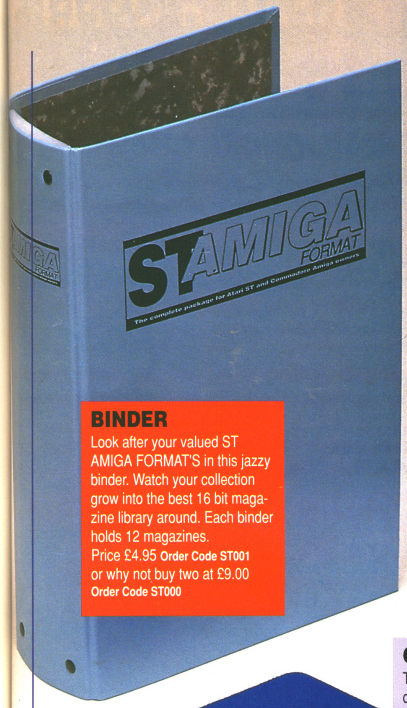

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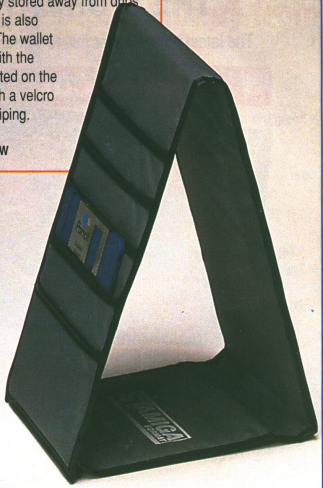

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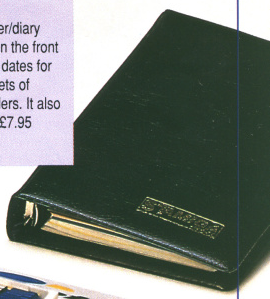

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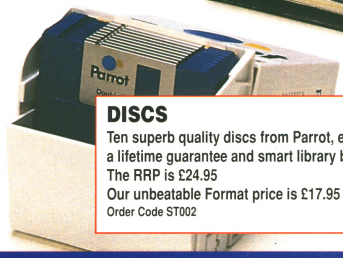

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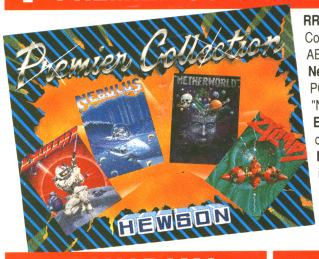

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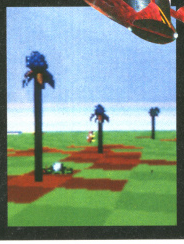

To remove the power you must destroy the Obelisk. And the only way to do this is to join every stone to the Obelisk by a continuous landpath, even by building vast bridges from island to island, if that is what is required. Your ability to create the landbridges that will connect the stones is determined by the collection of spore pods, which can grow quietly. For as the sky grows darker, the eggs begin to hatch and with a mighty clap of thunder the poisoned blood of the ancients will spread like fire. Some eggs will even eat away at the island itself. You must work fast.

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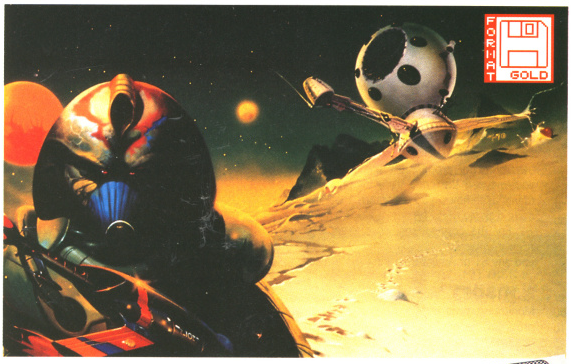

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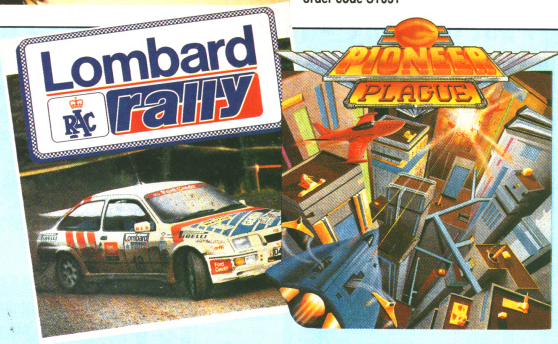

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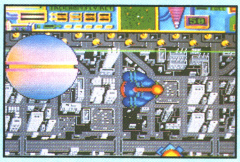
It's up to you to prevent the spread of the Probes. The Lifestar will take you around the Universe but the airship is your attack vehicle. By selecting a planet with Pioneer Probes in the vicinity, the Lifestar will whisk you away to a sub-Euclidean space zone. The quicker you cruise through here the fewer probes you'll need to total when you get to your clobbered planet.
Once a planet has been cleared it's back to the map to select somewhere else. When all planets have been cleared it's over – and better luck next time!



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Group action

I am thinking of setting up an Atari ST User's Group, to be called SAGE, but I need to know if any other people with Atari STs are interested in helping me. It will be a self-funding group which will publish a monthly magazine with all the articles written by members of the group.

If anyone is interested please drop me a line

It would help me if you send a stamped self-addressed envelope and of course most importantly please write down what you would like to see in the magazine and what else you wish the club to offer you. The magazine will only start when the club has enough support and any contributors will be paid a percentage of the profits, which will be low since the club's aim is not to make money but to create a friendly network of ST users all over the country and possibly the world.

David Pullin
3 Beacon Road,
Shevingtonmoor,
Standish,
Wigan WN6 0SB,
Greater Manchester

■ *Good luck with the mag, but don't stop buying* ST Amiga Format *will you?*

Globetrotting problems

HEELLP.... I have some urgent questions that I need answering.

If I were to buy some Amiga software in England would it work on an Amiga bought and used in America?

Also, if I were to be given some software for the ST bought in the States would it work on my ST bought and used in England?

I tried the BASIC program for changing the mouse pointer given in your extremely useful Desktop section and was unable to keep the preferred pointer when coming out of BASIC, how do I do this?

A Fairhurst
Lincoln, Lincs

■ *Any software for the Amiga should work fine on both European (PAL) and American (NTSC) Amigas. The only piece of software that will only function on one or the other is* ReadySoft's Dragon's Lair *which uses very low level internal timings that are different on PAL and NTSC Amigas.*

Problems can arise if you try to use European PAL software on an NTSC resolution Amiga. For example, many European games are written to use the extra 56 vertical lines offered by a PAL resolution machine. Because the American machines do not have this higher resolution, the software, if not written correctly, will not work.

The ST on the other hand, has the same resolution on both European and American machines and therefore these problems will not occur. Almost any software written for the ST should work fine on both American and European STs – the only exception we can think of being Calamus. *Calamus checks a piece of code in the ST's ROMs to see if it is running on an American machine or not. If not it won't run – it's a sort of copy protection to stop the importing of "grey" copies of the program into Britain.*

Why the Amiga wins across the Atlantic

I am an Amiga user and live in Ottawa, Canada. I work in a computer store where we sell the Amiga and the Atari ST. I've read your last two issues , I would have read earlier issues, but *Format* is only recently available in Canada. Your magazine is the best yet because it gives you the best of both sides and has lots of very interesting articles. Regarding your question "Why is the Amiga more popular in the USA and Canada than the Atari ST?" there are several reasons for this.

The Amiga is more versatile

It has lots of third party support (both hardware and software)

The graphics and sound difference between the two machines

Not enough software support for the Atari ST from the American software developers

The Amiga has almost become the video titling standard for TV broadcasting in Canada and the United States

Keep up the good work with your magazine.

Stephan Rohde
Ottawa, Canada

■ *Steve Gold has some more light to shed on the popularity of the two machines across the pond on page 19.*

It's a fair cop

There is one small thing that is wrong with your magazine! Every so often a picture is shown the wrong way up! For example, the picture from *Purple Saturn Day* in the cover disk section of issue 9.

Andrew Jackson
Liverpool, Merseyside

.erutuf ni luferac erom eb ll'ew ,yrroS ■

Coming clean about the machines

Your magazine seems to be very unbiased. I cannot believe this attitude can be maintained out of print so I would like to know which computers all important Format staff have. But I don't want to see any de-biasing going or I will club you to death with my pet armadillo's Filofax .

Daniel Germain
Newbury, Berkshire

■ *The* Format *team have to own up to a bit of a hodge-podge of machines. Top dog Richard Monteiro runs an ST Mega4 alongside his Amiga and Amstrad CPC, while disk coordinator Jason Holbourn would only swap his Amiga 2000 for the Spectrum he hides in his bedroom. Staff writer Gary Barrett is very even handed – one of each – but games editor Mark Higham only has an ST. New boy production editor Stuart Anderton has to admit to owning neither machine – a monochrome PC-AT for him. So there you have it - totally unbiased!*

Pen friends wanted

My complaint is a small one which can be easily rectified. Please start printing the full addresses of contributors to your letters pages. There have been a couple of times when I've wanted to contact fellow ST users (to pass on software, ask more detailed questions, etc.) but couldn't because of this.

I see no point in printing incomplete addresses, if someone wants their full address withheld for reasons of privacy then they can easily say so in their letter.

Nor should this cause space problems, two lines are already allocated for each letter contributor's details, if necessary you could use obliques as separators and cram in the extra information, eg:
Joe Bloggs/123 High St/ Hometown/Postcode.

Derek Paterson
Ayrshire, Scotland

■ *If a reader specifically wishes to be contacted, to answer a query or whatever, then of course we print their full address, otherwise we assume they want to be left in peace. Besides our art editor would have a fit at tiny type crammed into two lines.*

Come on, big boys

I can't understand why the big business software publishers like Microsoft, WordPerfect, Borland, Ashton Tate etc. don't convert their programs for the ST and Amiga. Converting Macintosh programs to ST versions should be a piece of cake for them. The ST version of *WordPerfect* and Microsoft *Write* are written very badly: we want *professional* programs! I mean there are more than a million STs around making a reasonable chance to make some money. The ST is more than just a great games machine!

I have a small tip when you are in the GEM Desktop: when you have a directory of a disk and you swap another disk in your drive you don't need to open a new window for a directory, just press ESC and you get a new directory on the same window.

Jay Lee
Capelle a/d yssel, The Netherlands

■ *Unfortunately not many of the millions of ST and Amiga owners can afford the £500 or so* WordPerfect *and the rest cost on the PC or Mac, so you get what you pay for.*

And converting programs from the Mac to the ST is no simple business – they may have the same processor but the Mac's weird and wonderful operating system is utterly different.

Spritely progress

I have recently upgraded from a C64 to an Amiga and was wondering if there was any software available that would allow me to create sprites and bobs for use in BASIC programs. On the Extras disk there is an object editor but that is very basic (excuse the pun) indeed. I noticed an advert for an AB Animator (page 93 issue 9) for the ST, is there anything like that available for the Amiga? Also I am toying with the idea of buying PD disks but I'm a bit worried about them being infected with a virus. Do the suppliers check them before selling them?

J Campey
Brentford, Middlesex

■ *If you treat yourself to HiSoft's excellent BASIC, then you'll be rewarded with a very handy little program that will let you do precisely what you require.*

Don't be put off the idea of buying PD software just because there is the possibility of picking up a virus; You'll be missing out on one of the few real bargains within the computer industry. Most PD suppliers regularly check all the disks for viruses and the chances of picking up a virus are minimal.

"Apparently it's essential if you want to do spreadsheet work"

"Nope, No vacancies for a galactic mercenary. Have you tried modelling for computer games?"

Very good, but...

I would like to say that I find your magazine the best one on the market for the ST and Amiga. I own an Amiga and the things on your cover disk are certainly very useful. Your games section is one of the best I've seen - and it's getting better. The reviews are brilliant and I love all the really sick jokes. I would buy your magazine especially for the games even if there wasn't a cover disk - the *Dragon's Lair* review was fantastic. All my friends agree that your games section is the best.

I think there ought to be a lot more games included and a few more of them spread across two pages – always the best. Can we have less of all the boring rubbish and serious stuff as well? Anyway, thanks for a great mag.

Marcus Sams
Solihull, West Midlands

■ *Cheers Marcus, we'll cut down on the boring rubbish right away.*

Crib sheet

I had to write to thank you for your section on Comms in issue 4. I found this very useful in my project for college entitled 'Comms – an Application for Computers in Communication Systems'. I ended up giving in a damn good piece of work and learning a lot myself, so I have put you at the top of the list in the bibliography.

Jason Druce
Leigh-on-Sea, Essex

■ *We'd never thought of* Format *as a learned journal before – watch out* Byte, *here we come!*

Another satisfied customer

I have purchased all the issues of *ST/Amiga Format* and I have had two disks which did not work. In fact they were unformatted blank disks with a label on. I have returned these and they have been replaced with working copies. My argument is that after having paid the extortionate price of £2.95 I then have to encounter extra expense on postage and packing to return these disks. This is not good enough. When they were returned there was no apology or refund of costs.

Should I ever buy the magazine in future and receive a disk that does not work then that will be the last *ST/Amiga Format* I will ever buy. It's about time you

checked all disks properly before they are sent out. It's all right replacing them but not at your readers' expense.
H D Twiddle
Hull, Humberside

■ *We make every effort to make sure all the cover disks work, but there are tens of thousands of them and it is physically impossible to check them all. Unfortunately, try as we might, there will always be a few disks that won't work.*

Jumping for joysticks

I am thinking of buying a colour printer and the article on colour printers in issue 7 was just what I needed. Have you any plans to review joysticks, because I need a new one that is hard wearing? My last one was free with the computer, a Ram Delta, but I had only had it for a month when it broke.

There is no way I can play some of my favourite games like *FA/18 Interceptor* or *Speedball* because the down direction does not work.

Also, whenever I use my Cover Disk it loads, but I always get the message 'Error validating Cover Disk' and I have to swap the Workbench disk and the Cover Disk in the drive several times before I can use it.

Still, I think the selection of software on the cover disk is amazing. The scenery generator was brilliant and I'm definitely going to get *Purple Saturn Day*.

My father is an architect and he would like to know whether there are any good CAD packages on the market for the Amiga.
S J Carn
Eastbourne, East Sussex

■ *You're in luck! Next month's* Format *will feature just the joystick review you're looking for. And point your dad in the direction of page 52 for part one of our CAD feature.*

Small spreadsheets

There are a number of good word-processors for the ST, which one is the best is really determined by the user and the usage. I am quite content with a pedestrian writing utility but need a dictionary and thesaurus; others more confident about their typing and English may have different priorities.

One of the reasons why the ST has failed to make a mark in the business market is the lack of a reasonable spreadsheet for the machine (most micros in an office run this type of program). The main reason, obviously, is that it isn't IBM compatible. I purchased *VIP Professional* to enable me to continue working on *Lotus 1-2-3* files at home and have come across two main problems: firstly it's so slow because of GEM, and secondly, most significantly for me, the largest spreadsheet I can construct on my extended, 1 meg, 520STFM is around 150K. This compares with 380K files on a 640K IBM clone .
D P Rickwood
Tonbridge, Kent

■ *If you don't need 1-2-3 compatibility there are plenty of spreadsheets which let you use the full memory of the micro – and if the ST was your main business machine compatibility with PCs wouldn't matter.*

Sound of mind?

I have found your free disk impressive each month. With regard to issue nine's there was a program called SPEAKTEX which I have a question about .

When you type, for example, the word 'HELLO' and press Return, the letters HEHLOW appear underneath. What does this mean?
K D Smith
Hucclecote, Glos.

■ *Ther prowgram iz spehling ther wordz owt ther way thai sownd beefour it says them owt lowd.*

Call me

I am utterly bored with all the free BBs I have logged on to so I decided I would set up my own BB just for uploading and downloading PD software. My problem now is testing all my software and hardware so what I need is an ST or Amiga user (I have no Amiga) who would be happy to help me test my equipment and in return I will download to him or her some great PD software. If you are interested, please phone me after 6pm weekdays on (0242) 45372 so we can arrange a time to log on.
Simon Tarplee
Cheltenham, Glos

■ *No cranks please.*

Vital question

Why does Commodore Man always win in Superheroes Inc.?
A J Herbert 'Herbie'
Edinburgh, Scotland

■ *Ask Jack Tramiel*

Bugged BASIC

Your most recent issue has revived my flagging interest in Amiga programming. Like many home users I have been searching for a not-too-difficult language as a faster alternative to AmigaBASIC to write some interesting, reasonably fast, colourful and spritely programs.

My choice was the bug-ridden GFA BASIC 3.0, and I am most grateful to *Format* for publishing the address of *GFA User. Format* is the only magazine that has taken note of the plight of recent purchasers of this first GFA version for the Amiga.
John Gray
Eastbourne, Sussex

■ *Glad to be of assistance, sir.*

C on the cheap

The popular computer press say that C is a trendy language to write in. It seems fast if *Marble Madness* and some Amiga ROMs were written in it. I would like to learn C but have been put off by the prohibitive prices of C compilers - anything from £150 upwards. I am still at school and cannot afford such extreme prices. Is there any way that I can get into C cheaply, about £75 maximum? Surely there must be something in the way of PD software - it does not have to be brilliant, I only want to experiment!
Fergal Moane
Belfast, Northern Ireland

■ *There are several C compilers in the public domain but we haven't tried them out ourselves. Try checking out Fish disk number #110 which includes not only a C compiler but also a 68000 assembler!*

Video nasties

I recently encountered a problem whilst trying to record output from my ST onto video.

My intention was to use *Message Writer* (cover disk issue 8) to create a message to grandad from my two sons, which was to be recorded onto the leader of the video purchased for his birthday.

A suitable message was created and the ST was duly connected to the video recorder via the aerial-in socket. When the recorder and ST were switched on, I was unable to get a picture on the TV screen. I tried to retune one of the channels but to no avail.

Disappointed, I gave up on the idea until a meeting with my brother-in-law, who is rather clever with computers. He explained a possible reason for my problem:

Computers are generally tuned to transmit on channel 36, as are video recorders. The problem is that the two signals can interfere with each other, resulting in very poor output to the TV. His solution to the problem was simple: retune the output signal from the computer.

Interest in the idea was re-kindled, and I consulted my ST Owner's Manual which indicated a Lo/Hi switch on the back panel – great!

Wrong! There wasn't one on my computer, it has a built-in modulator. Not to be outdone, I looked closely at the back of the video recorder: Bingo! - a tuning screw, a quick tweak of which resulted in loss of picture on the normally connected TV. A spare channel was tuned in to the computer, and Message Writer was up and running in no time.

Sticky tape was placed over the write-protect slot and my message was recorded as planned, and Grandad had a unique, personalised (pre-recorded) film for his birthday.
Graham Cornfield
Walsall, West Midlands

■ *Great idea! I've now personalised my copy of 'Frankenstein's Revenge' by putting scenes from FrightNight over the boring bits.*

prize letter format

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The value for money offered by the Atari ST range is reflected in the Explorer Pack featuring the 520ST-FM computer with 512K RAM. The 520ST-FM computer now comes with a built-in 1 Mb double sided disk drive as well as a free mouse controller and a built-in TV modulator. The new 520ST-FM Explorer Pack includes the 520ST-FM computer, the arcade game Ranarama, a tutorial program and some useful desktop accessories. In addition, if you buy the Explorer Pack from Silica, we will give you the Silica ST Starter Kit worth over £200, FREE OF CHARGE. Return the coupon for details of our Starter Kit and of the full ST range.

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Before you decide when to buy your new Atari ST computer, we suggest you consider very carefully WHERE you buy it. There are MANY companies who can offer you a computer, a few peripherals and the top ten selling titles. There are FEWER companies who can offer a wide range of products for your computer and expert advice and help when you need it. There is ONLY ONE company who can provide the largest range of Atari ST related products in the UK, a full time Atari ST specialist technical helpline and in-depth after sales support, including free newsletters and brochures delivered to your door for as long as you require after you purchase your computer. That one company is Silica Shop. We have been established in the home computer field for ten years with an annual turnover in excess of £8 million and can now claim to meet our customers requirements with an accuracy and understanding which is second to none. But don't just take our word for it. Complete and return the coupon below for our latest literature and begin to experience the Silica Shop specialist Atari service.

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Do you already own a computer If so, which one do you own? .....

DTP ☐

Transfer tips

A tip for Atari users wanting to transfer text files from their ST to a PC.

Format a 3.5-inch disk on the PC then compose your letter/document with your wordprocessor as normal but save the file in ASCII on to the prepared PC disk — the ST will be unaware that this is any different from a normal disk.

The text file can now be loaded into the other WP and will appear perfectly as you composed it except that any features such as italic script or underlining will have been lost.

The process also works the other way round as long as you save the file as ASCII.

This process is also useful for those without printers at home as the Readme files found on PD disks are usually in ASCII and can be 'dragged' on to a prepared disk for printing on the boss' expensive laser printer in the office.

L E Bovington
New Southgate, London

It's a menace

When I saw *Menace* from Psyclapse on my friend's Amiga, I thought to myself, I have got to get this game! It was fantastic!

There we were, volume full up (in stereo), blasting alien scum-suckers into oblivion. Great fun!

At the *Atari User* Show Psygnosis were offering Menace and something called *Baal* for 20 quid. Snapping up this 'bargain' and rushing it home, we settled in front of the computer, loaded Menace and our jaws just hit the floor. I felt totally and utterly ripped off. The graphics are of eight-bit standard, the animation is very jerky and the screen layout has totally changed from the Amiga version,.

If I had met Brian Watson, who coded the ST version, after loading Menace, I would gladly have inserted the disks, packaging and little booklet into....

Bryan Stevens
Andover, Hants

■ *No threats of physical violence to programmers, please. Well Brian, is he telling the truth? Do write and tell us.*

The Irish question

Bet you've never got a letter from over here.

Question: Why do we hear all about the Amiga CLI and never about the ST one? Any BBC/IBM weaned ST user wouldn't be without it. All the batch files, copy procedures and echo commands are there. It's very easy to use.

I will be watching with interest to see if this is the first and only letter from NI to ever appear on your pages.

Sean Currie
Co Antrim, Northern Ireland

■ *Ahem, take a look at the previous letter...*

Version query

I have been reading in the Amiga dedicated press since at least December, if not before, that all new Amiga 500s are being shipped with workbench V1.3. When I bought mine on 9th February, the computer powered up with the V1.3 screen, but the workbench supplied was V1.2.

I phoned the supplier, Homesoft, who said that it was Commodore's policy that all A500s were being shipped with V1.2 workbench and that V1.3 would have to be bought as an upgrade! Somebody's wrong!

Dougie Popkiss,
Strathclyde, Scotland

■ *After recently purchasing an Amiga 500 from Commodore ourselves, the machine was supplied with Workbench and extras 1.3. It will probably take a couple of months before all Amigas come complete with Workbench 1.3.*

Something for nothing

Memory upgrades for the ST are not as easy to do as some companies would like you to believe. We have had to refit upgrades that didn't work after being supplied by these 'cowboys'.

At the moment there are three different types of D-RAM chips which are used in STs: 256 x 1 bit, 256 x 4 bit, and surface-mounted chips. Surface mounted chips need special equipment to fit, and 256 x 4 bit chips are sold at vastly inflated prices, so 256 x 1 bit is the only possible avenue for users who require upgrades.

We have produced an upgrade board which can use either 256 x 1bit or 1Mb x 1bit chips, giving users the option of 1Mb or 2.5Mb of RAM.

You can get details by phoning me on 0772 203166.

B Davies
Ladbroke Computing
Preston, Lancs

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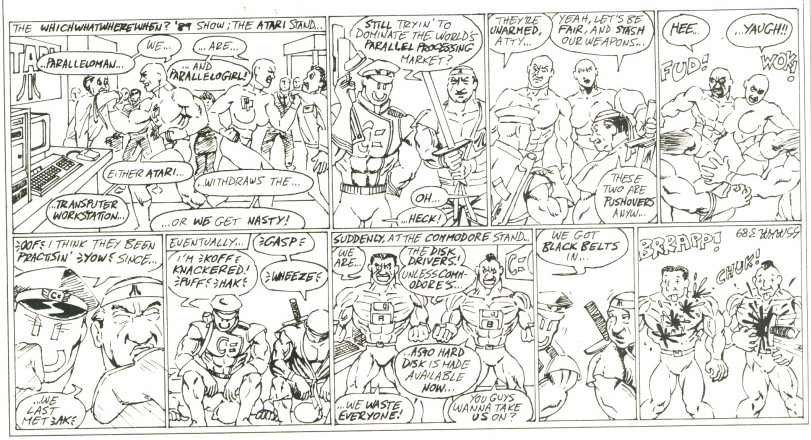
by Sarkar



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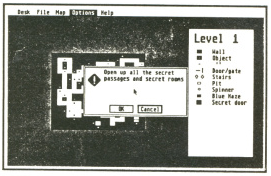
DUNGEON MASTER EDITOR



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As reviewed in ST Action (December 1988)

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THIS MONTH : GARY BRACEY

DESERT ISLAND DISKS

■ **Gary Bracey of Ocean posing beside his Suzuki jeep on the dream desert island – well actually it's in Majorca.**

Imagine you're about to be deposited on a sun-bleached desert island; you can take your ST or Amiga (both, if you own the two machines), 10 items of software and a computer-related luxury item. Don't worry about power sockets – this island comes well equipped. Your real worries are which software titles to take along.

The software can be anything from games to serious applications while the luxury item could be a computer desk, a hard disk or even a subscription to *ST/Amiga Format*! (Now we're talking – Ed).

We put Gary Bracey, software development manager at Ocean, in that unenviable position. This, in no particular order, is what he would take and why:

■ **Dungeon Master**, Mirrorsoft
Really believable game world. You don't need to be into adventuring to enjoy it.

■ **Barbarian**, Psygnosis
First game that showed off the difference between eight-bit and 16-bit graphics. It's still as playable as when it first appeared.

■ **Giana Sisters**, US Gold
Modeled on Super Mario Brothers *(one of the all-time greats) so ithe conversion was bound to be a classic.*

■ **Bubble Bobble**, Firebird
Marvelous coin-op conversion of a horribly addictive arcade game. Terrific two-player action.

■ **Operation Wolf**, Ocean
Monster arcade hit which was successfully converted onto 16-bit.

■ **Captain Blood**, Infogrames
Superb graphics, great sound effects and gameplay. The French certainly know what appeals to gameplayers.

■ **Xenon**, Melbourne House
One of the first – and still the classiest – shoot-em-ups to make it on the ST and Amiga. Graphically superb.

■ **Nebulus**, Hewson
A simple idea well implemented. One of the most addictive puzzle games to appear for a very long time.

■ **Deja Vu**, Mindscape
Devious graphic adventure game. I'm stuck; can anyone help?

■ **Arkanoid II**, Imagine
Best Breakout *clone by far – and there have been many.*

Says Gary: "As I work in computers all day, I look for something that will keep me interested. Mindless entertainment if you like. All the games listed have something going for them. Visual and audio appeal are important to me – you can see that in the games I have chosen. For the luxury item I'd choose a 0.5Mbyte upgrade board for the computer. More and more games require the extra memory."

You now have one person's opinion of what is the best software to take to a desert island. Now it's your turn. We want to hear about your favourite programs and why you like them. Send your selection to DID, *ST/Amiga Format*, 4 Queen Street, Bath, BA1 1EJ.

ADVERTISERS INDEX

16 Bit Centre	86	Database	17, 41	Media Gold	107	Silica Shop	59, 117
17 Bit Software	97	Dataworld	94	Megaland	57	Siren Software	69
ASAP	103	Datel	82-83	Merrymode	108	Softsellers	89
Adventures	121	Digicom	101	Micro Media	52	Softville PD	22
Arnor	104	Electronic Arts	15	Microdeal	27	Software Circus	IBC
Arran	6	Empire	18	Miditech	97	Software Club	
Athene	121	Evesham Micros	45	Mirrorsoft	OBC	International	51
Axagrafix	32	Futureplace		Newport Business		Software Superstore	39
Castle		Computers	93	Supplies	39	Systek	103
Software	79	George Thompson		Photofile	81	TC Computers	97
Cavendish	49	Services	29	Postronix	2-3	The Computer Shop	55
Clik Amiga	75	Graphix	97	Quadsoft	32	Third Coast	
Clik ST	74	Hisoft	11	Romantic Robot	90	Technologies	32
Club 68000	20-21	Homebased		SDC	113	Track Computers	52
Computer		Business	121	ST UK Purple	94	Treble H Computing	81
Connections	108	Ladbroke	64-65	Sabre 16	103	Vector Software	39
Copy Comm	66	MJC Supplies	63	Sensitive Systems	37	Video Vault	107
DGA	81	Matrix	103	Shareware Express	121	Worldwide	22

NEXT MONTH

The June issue of Format will be swooping into a newsagents near you on

THURSDAY MAY 18

Among the astounding articles jostling for position in its pages are:

■

MIDI MARVELS

Every musical instrument you ever wanted to attach to your machine but didn't know how. MIDI microphones, guitars, drum kits, digital horns, keyboards et al.

■

FUTURE PROCESSING

A look at tomorrow's microprocessors together with a special report on Bell Labs' pioneering work into living chips. The next machine you own might be alive!

■

PIXEL PORNOGRAPHY

Format investigates everything from sexist advertising to underground hardcore. Risqué is an understatement.

■

PAINT WARS

After Deluxe Paint III comes Photon Paint 2. Format's verdict on which Amiga paint package you should get.

■

GAMES GALORE

Darkside and Lords of the Rising Sun are set to outshine all other Format Golds. There's also Pacland, Vindicator, and Outrun Europa to brighten up your day – can you wait? Because new products are appearing (and disappearing) constantly for the ST and Amiga, we can't guarantee that everything mentioned here will end up in the magazine, but we can guarantee a great issue. See you next month.

FINDING ALL THE SOFTWARE YOU NEED USED TO BE A BIT HARD ON THE OLD FEET.

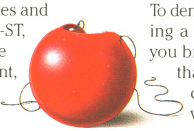
Up 'till now, you could have wandered all over town and not necessarily have found all the software you need. But happily, now at Software Circus you'll discover all the software you could possibly need, without wearing out the soles of your shoes.

In fact, we've got the latest releases and around 2,000 titles in stock for ATARI-ST, AMIGA, Mac and 100% IBM compatible computers. They cover entertainment, business, programming, music and sound, graphics, education, CAD . . . you name it.

And prices start from £9.95 to £200 and over. What's more, our staff know what they're talking about and will endeavour to give you a demonstration of some of the software in our store.

We even give you the peace of mind of free after-sales hotline support.

To demonstrate our seriousness, we're offering a 5% discount on everything* when you bring in this advertisement. To show that we've also got a sense of humour, come in wearing a red nose and we'll give you 10%. Now that's not to be laughed at, is it?



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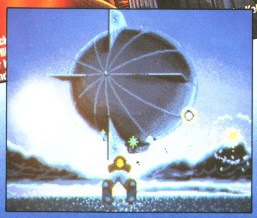

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